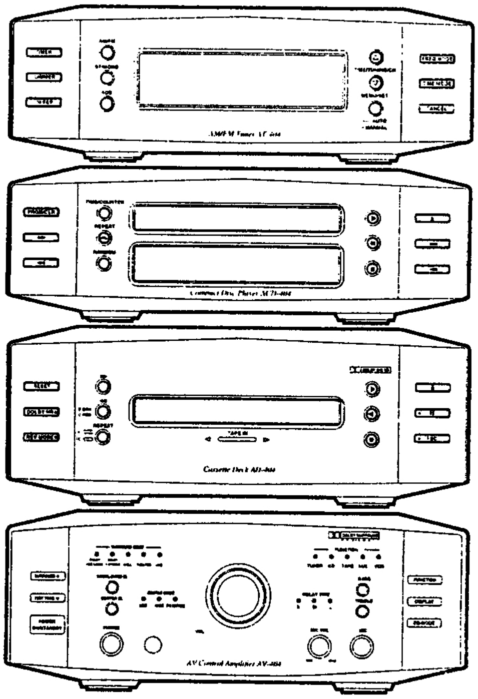
Quelle
TECHNISCHER
KUNDENDIENST

Technische Unterlage

Best.-Nr.:
036 765 6
036 766 4
036 904 1



Technische Daten

Netzanschluß:	230 V ~ +6 /-10% 50 Hz
Leistungsaufnahme:	210 Watt max.
Abmessungen in cm. ca.:	Breite 27.5 Höhe 39.5 Tiefe 27cm
Verstärkerteil	
Maximale Ausgangsleistung:	2 x 300 Watt bei Stereobetrieb
Lautsprechermindestimpedanz:	8 Ohm (Anschlußwert)
Übertragungsbereich:	von 40Hz, 16kHz 1.5dB
Übersprechdämpfung:	30 dB bei 1000 Hz
FM-Bereich (UKW)	87.5 - 108 MHz
Empfindlichkeit:	6 µV
Hub:	22.5 kHz und S/R - 26 dB:
40 kHz Hub - 46 dB S/R:	40 µV
Fremdspannungsabstand:	>50 dB
Pilotunterdrückung:	19 kHz = 40 dB 38 kHz = 50 dB
MW-Bereich	MW522-1620kHz
Empfindlichkeit für	MW 1500 µV 26 dB S/N:
Pro-Logic-Betrieb	
Maximale Ausgangsleistung:	2 x 200 Watt Hauptlautsprecher 2x 55 Watt Surround links/Surround rechts 1x 90 Watt Center-Kanal
Frequenzgang:	Dolby Surround 100Hz bis 7kHz, Matrix 20 Hz bis 20 kHz Hall 1 00 Hz bis 7 kHz
Signal-/Rausch-Verhältnis (im Surround-Betrieb):	>75 dB
Verzögerungszeit:	20 ms; im Dolby-Betrieb auf 15 und 30 ms umschaltbar
Verzögerungsverfahren:	digital
Eingangsempfindlichkeit (Line-Eingang):	250 mv
Eingangsimpedanz:	47 kΩ
Maximale Eingangsspannung:	3.5V
Betriebsarten:	Dolby Pro Logic, Dolby 3 Stereo, Hall, Theater und Live REAR = Lautsprecheran. 8 - 16 Ω CENTER = Lautsprecheran. 8 - 16 Ω R = rechter Kanal; L = linker Kanal
Cassettenteil	
Übertragungsbereich Aufnahme und Wiedergabe:	(-8 dB) 63 Hz - 12500 Hz
Geschwindigkeitsabweichung:	1.0 %
Tonhöhenschwankung:	0.3 %
Tonband:	Normal-Cassetten/Chrom (Eisenoxid, Fe_2O_3)/CrO_2
Geräuschspannungsabstand:	50 dB
Löschdämpfung:	70 dB
CD-Spieler	
Optischer Tonabnehmer:	3-Strahlen-Laser
Fehlerkorrektur:	CIRC
D/A-Umwandler:	16-Bit-linear mit 8-fach Oversampling

UTS-Nr.:	999	QUELLE
Best.Nr.:	0367656/01	
Ger.Bez.:	UNIVERSUM-MINI-ANLAGE	
GKz:	G	GERAET
WGT:	650	MICRO-/MINI-ANLAGEN
KD-Sektor:	R	RUNDFUNK
BaumNr.:	00	KEIN DIAGNOSEBAUM VORHANDEN
Klassierung:	STG	STEREOG., TUNER, VERST., STEUERG
IFW-FehlerGru.:	205	RDF.,VERST.,TB.,PHONO,CD,CB
Type/Privileg/Universum.Nr	VTC-CD165	
Beschreibung		DSP,RDS
VK-Preis:	899.00	
Serviceart:	01	QUELLE-TKD
Garantie fuer Kunden	06	Monate
Sondervereinbarungen:	0	SIEHE SERVICEART

Quelle Schickedanz AG & Co.
Kundendienstzentralleitung Duisburger Str. 57, 90451 Nürnberg
Bei allen Reparaturen sind die gültigen Sicherheitsvorschriften zu beachten!

Nachdruck nicht gestattet
Änderungen vorbehalten

Inhaltsverzeichnis

Seite
Bedienungselemente 3-4

Service Manual Verstärker A-404

Anschlüsse,Bedienungselemente Fernbedienung 5
Explosionszeichnung 6
Verdrahtungsplan 7
Blockschaltbild 8
Schaltplan NF-Endstufe 9-10
Schaltplan Fernbedienung, Steuerung 11-12
Schaltplan Netzteil,Dolby-Prologic-Decoder 13-14
Platinenlayout 15-16
Platinenlayout NF-Endstufe 17

Service Manual Tuner AT-404

Explosionszeichnung 18
Schaltplan Hauptplatine 19-20
Blockschaltbild 21-22
Schaltplan Tuner-Display 23-24
Platinenlayout 25-26
Abgleich 27
IC-Pinout ANAM1201T 28
IC-Pinout LA1266/LA3410A/LC7218/LA2232 29

Service Manual Cassettendeck AD-404

Explosionszeichnung 30
Abgleich 31
Messpunkte 32
Schaltplan Hauptplatine 33-34
Platinenlayout 35
Blockschaltbild 36

Service Manual CD-Player ACD-404

Explosionszeichnung 37
IC-Anschlußbelegung 38-40
Blockschaltbild 41-42
Schaltplan Hauptplatine 43-44
Schaltplan Display 45-46
Platinenlayout 47-48
Abgleich 49
IC-Anschlußbelegung 50

Bedienungselemente und Funktionen

Cassettendeck

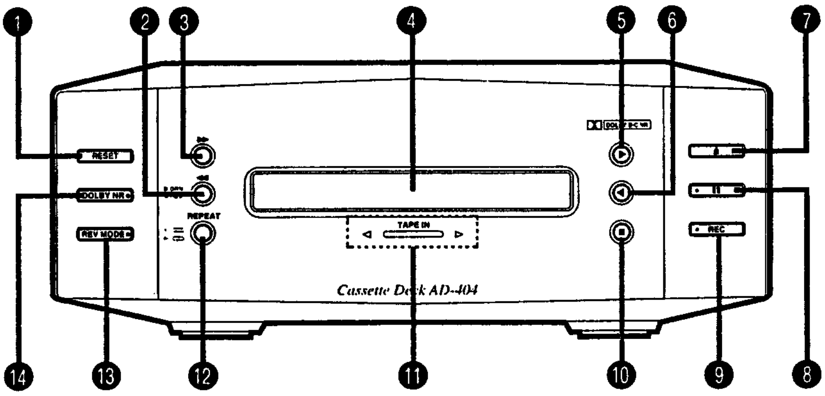
1. **RESET** = Bandzählwerk zurückstellen
2. ◀◀ = schneller Cassettenrücklauf Seite „B"
3. ▶▶ = schneller Cassettenvorlauf Seite „A"
4. Cassettenschublade
5. ▶ = Wiedergabe von Seite „A"
6. ◀ = Wiedergabe von Seite „B"
7. ▲ = Öffnen/Schließen der Cassettenschublade
8. II = Pausetaste
9. **REC** = Aufnahmetaste mit Funktionsanzeige
10. ■ = Stoptaste
11. ◁/▷ Laufrichtungsanzeigen (die jeweilige Laufrichtung der Cassette wird angezeigt)
12. **REPEAT** = Wiederholautomatik
13. **REV MODE** = Wahl der Cassettenwiedergabe
14. **DOLBY NR.** = Rauschunterdrückungssystem

Verstärker

15. **TEST TONE** = Signal zur Abstimmung aller Pegel
16. **SURROUND** = Dolby Surround-Funktion ein- ausschalten
17. **SURROUND M.** = Wahl des Klangbildes
    DOLBY PRO LOGIC = 5 Kanal-Wiedergabe
    DOLBY 3 STEREO = 3 Kanal-Wiedergabe
    Raumklangwahl **HALL**
    Raumklangwahl **THEATER**
    Raumklangwahl **LIVE**
18. **SURROUND MODE** = Anzeige der jeweiligen Surround-Funktion
19. **CENTER MODE** = Anzeige der Center-Betriebsart
20. **VOL** = Lautstärkeregler, Gesamtlautstärke
21. **DELAY TIME** = Anzeige S/M/L
22. Anzeigen für die gewählte Funktion
23. **BASS** = Einstellen der Tiefen um +/- 10 dB
24. Wahl der Funktion
    TUNER = Rundfunkwiedergabe
    TAPE = Cassettenbetrieb
    CD = CD-Wiedergabe
    AUX = Wiedergabe von Zusatzgeräten
    VCR = Tonwiedergabe von einem TV-Gerät oder Videorecorder/-kamera
25. **EQ-DISPLAY**=Wahl der Klangbilddarstellung
26. **EQ-MODE** = Wahl des Klangbildes
27. **TREBLE** = Regeln der Höhen um +/- 10 dB
28. **MIC** = Mikrofonanschluß 6,3 mm Ø
29. **MIC VOL** = Mikrofonmischregler
30. **IR SENSOR** = Fernbedienungsempfänger
31. **PHONES** = Kopfhörerbuchse 6,3 mm Ø
32. **CENTER MODE** = Wahl der Center-Betriebsart
33. Bereitschaftsanzeige ON/STANDBY
34. **POWER** = Netzschalter

Bedienungselemente

Cassettendeck


1
2
3
4
5
6
7
RESET
DOLBY NR
REV MODE
REPEAT
TAPE IN
Cassette Deck AD-404
REC
14
13
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10
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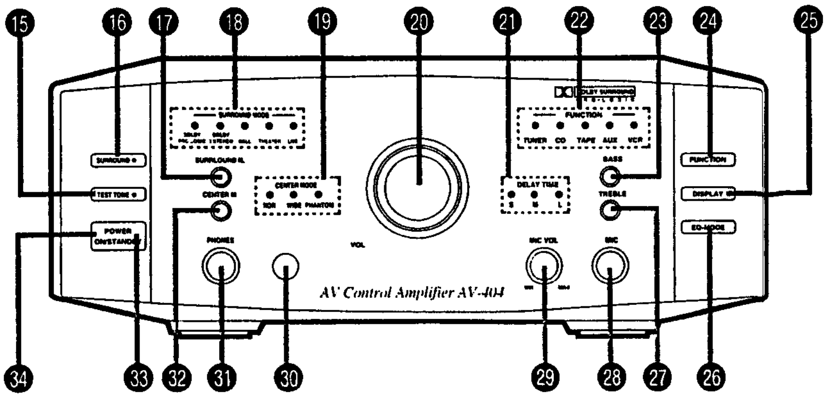
Verstärker


15
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24
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SURROUND MODE
SURROUND
TEST TONE
POWER ON/STANDBY
SURROUND M.
CENTER M
CENTER MODE
PHONES
VOL
DELAY TIME
FUNCTION
TUNER
CD
TAPE
AUX
VCR
BASS
TREBLE
MIC VOL
MIC
DISPLAY
EQ-MODE
AV Control Amplifier AV-404
34
33
32
31
30
29
28
27
26

Tuner

35. **TIMER** = Aufrufen der Uhr- oder Timerzeit
36. **ST/MONO** = STEREO/MONO-Umschaltung
37. **FM/AM** = Wahl des Frequenzbereichs; **FM** = UKW, **AM** = Mittelwelle
38. Tunerdisplay
39. ▲ **TIME/TUNING** = Einstellen der Zeit oder Frequenz nach oben (höhere Frequenzen)
40. ▼ **TIME/TUNING** = Einstellen der Zeit oder Frequenz nach unten (niedrigere Frequenzen)
41. **FREQ MODE** = Wahl der Frequenzeinstellung ; automatisch/manuell oder aufrufen der gespeicherten Sender
42. **TIME MODE** = Einstellen der Uhr-/Alarmzeit
43. **CANCEL** = Löschen der gespeicherten Sender
44. **MEMO/SET-AUTO/MANUAL** = Automatische/manuelle Senderspeicherung
45. **RDS** = Radio Data System-Funktionen einschalten und wählen
46. **SLEEP** = Wählen der automatischen Ausschaltzeit
47. **DIMMER** = Einstellen der Anzeigehelligkeit

Tuner-Display

a. Surround-Anzeige
b. **SLEEP** = Anzeige
c. **STEREO** = Anzeige
d. **PRGM** = Senderprogramm-Anzeige
e. **TUNED** = Optimale Sendereinstellung
f. EQ MODE = **ROCK - POP - VOCAL - CLASSIC** und **FLAT** Anzeige der Equalizer-Charakteristik
g. Funktion-, Frequenz-, Zeit-, Bandzählwerkanzeige
REAR LEVEL = Lautstärkeeinstellung Rückseite
CENTER LEVEL =Lautstärkeeinstellung Mitte
BASS = Einstellen der Basswerte
TREBLE = Einstellen der Höhen
h. ◷ TIMER = Timer-Funktionsanzeige

CD-Spieler

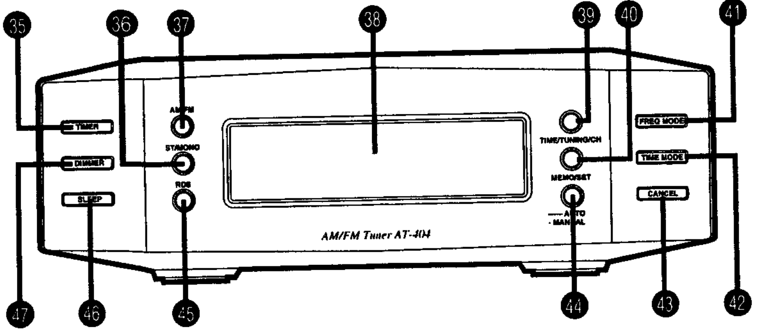
48. **PRGM/CLR** = Speichern der CD-Titel und Löschen der Programmierung
49. **TIME/COUNTER** = Umschalten von Zeit- auf Zählwerksanzeige
50. CD-Schublade
51. ▶ = Wiedergabetaste für **CD**
52. ⏏ = Öffnen der CD-Schublade
53. ▶▶| = Titelwahl vorwärts
54. |◀◀ = Titelwahl rückwärts
55. II = CD-Pause
56. ■ = CD-Wiedergabe beenden
57. CD-Spielerdisplay
58. **RANDOM** = Wiedergabe einer Zufallsreihenfolge
59. **REPEAT** = Wiederholautomatik eines/aller Titel
60. ◀◀ = Suchlauf rückwärts
61. ▶▶ = Suchlauf vorwärts

CD-Spielerdisplay

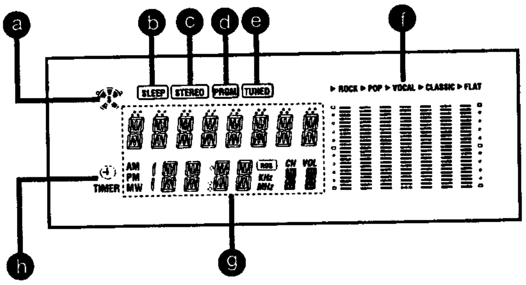
i. **RANDOM** = Wiedergabe einer Zufallsreihenfolge
j. ▶ = Anzeige für CD-/Cassetten-Wiedergabe
k. II = Anzeige der Pausefunktion
l. ◀ = Cassettenwiedergabe im Reverse-Mode
m. Spielzeit-/Titelnummernanzeige
n. Anzeige der gewählten Repeatfunktion
o. Titelnummernanzeige in Balkenform
p. **PROGRAM** = Anzeige für Wiedergabe einer Programmreihenfolge

Bedienungselemente

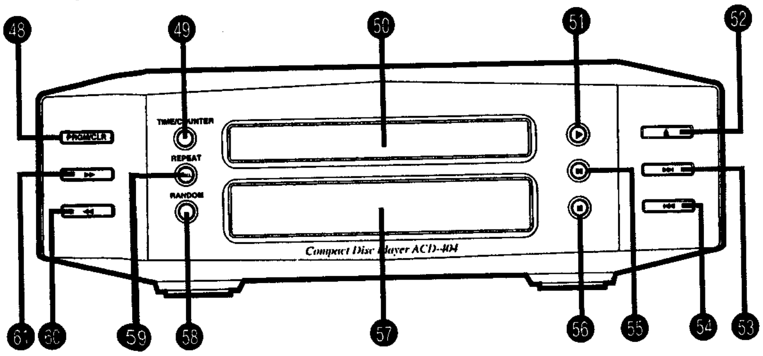
Tuner


35
36
37
38
39
40
41
TIMER
DIMMER
SLEEP
AM/FM
ST/MONO
RDS
TIME/TUNING/CH
MEMO/SET
AUTO
MANUAL
FREQ MODE
TIME MODE
CANCEL
AM/FM Tuner AT-404
47
46
45
44
43
42

Display


a
b
c
d
e
f
SLEEP
STEREO
PRGM
TUNED
▶ ROCK ▶ POP ▶ VOCAL ▶ CLASSIC ▶ FLAT
AM
FM
MW
TIMER
RDS
KHz
MHz
CH
VOL
h
g

CD-Spieler


48
49
50
51
52
PRGM/CLR
TIME/COUNTER
REPEAT
RANDOM
Compact Disc Player ACD-404
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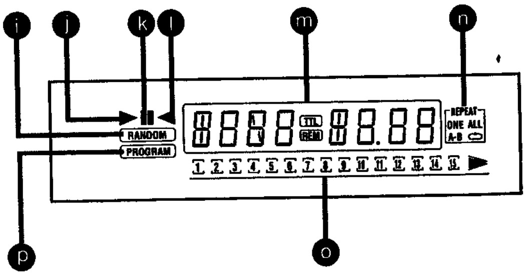
Display


i
j
k
l
m
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RANDOM
PROGRAM
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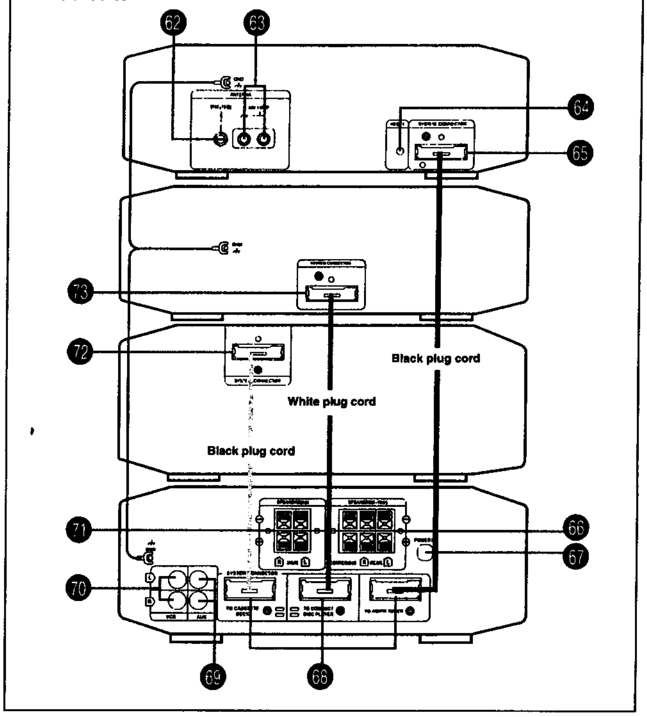
REM
REPEAT
ONE ALL
A-B
p
o

Anschlüsse Rückseite

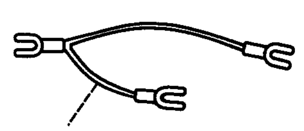
Bedienungselemente

Rückseite


62
63
64
65
73
72
Black plug cord
White plug cord
Black plug cord
71
66
67
70
69
68

Rückseite

62. **FM** (UKW)=Antennenbuchse
63. **AM** (MW)=Antennenanschlüsse
64. **RESET**=Speicherrückstelltaste
65. Anshluß für Tuner-Systemsteuerung
66. Pro Logic-Lautsprecheranschlüsse
    CENTER=Lautsprecheranschluß
    R=Rechter Kanal (Rear)
    L=Linker Kanal (Rear)
67. Netzanschlußkabel 230V/50Hz
68. Anschlüsse für Systemsteuerung Cassettendeck, CD-Spieler und Tuner
69. **AUX R/L**=Anschluß für Zusatzgeräte
    R=rechter Kanal (rot)
    L=linker Kanal (weiß)
70. **VCR R/L**=Anschluß für Zusatzageräte ; z. B. TV-Gerät oder Videokamera/recorder zur Tonwiedergabe
    R=rechter Kanal (rot)
    L=linker Kanal (weiß)
71. **SPEAKER**=Stereolautsprecheranschluß
    R=rechter anal (rot)
    L=linker Kanal (weiß)
72. Anschluß für TAPE-Systemsteuerung
73. Anschluß für CD-Systemsteuerung (weiße Stecker)

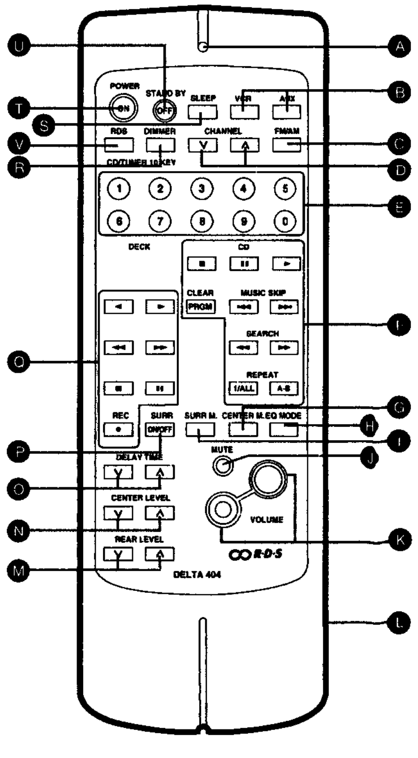


System-Erdungsdraht

Fernbedienung

A. Funktionsanzeige in zwei Farben:
   rot=allgemeine Funktionen. **grün**=nur CD-Spielers
B. Funktionstasten VCR-AUX
C. **FM/AM**=Wählen des Frequenzbereichs
D. **CHANNEL** = Aufrufen der gespeicherten Sender
E. **1-0**=Aufrufen der Senderspeicher/CD-Titel
F. Funktionstasten CD-Spieler:
   ■ =CD-Stop, ❚❚=CD-Pause, ▶=CD-Wiedergabe
   PRGM=Speichern der CD-Titel/Löschen der Programmierung,
   ⏮=Titelwahl rückwärts, ⏭=Titelwahl vorwärts,
   ◀◀=Suchlauf rückwärts, ▶▶=Suchlauf, vorwärts
   REPEAT 1/ALL=Wiederholautomatik, A-B=Wiederholung
G. **CENTER M.**=Wahl der Center-Betriebsart
H. **EQ MODE**=Wahl des Klangbildes
I. **SURR. M.**=Ein-/Ausschalten der SURROUND-Funktion
J. **MUTE**=Absenken der Lautstärke
K. **VOLUME -/+** =Lautstärkeeinstellng
L. Batteriefach (Rückseite) für 2x 1.5V Micro-Batterien
M. **REAR LEVEL**=Lautstärkeeinstellung Rückseite
N. **CENTER LEVEL**=Lautstärkeeinstellung Mitte
O. **DELAY TIME**=Einstelltasten für die Zeitverzögerung
P. **SURR: ON/OFF**=Surround-Funktion Ein-/Ausschalten
Q. Funktionstasten für Cassettenbetrieb:
   ◀/▶=Cassettenwiedergabe Seite "A" oder "B",
   ◀◀=Suchlauf vorwärts, ▶▶=Suchlauf rückwärts, ■ =Stop,
   ❚❚=Pause , **REC**=Aufnahmetaste
R. **DIMMER**=Einstellen der Anzeighelligkeit ~~(ohne Funktion)~~??
S. **SLEEP**=Wählen der automatischen Ausschaltzeit
T. **POWER ON**=Einschalten der Anlage aus Bereitschaft
U. **STAND BY OFF**=Ausschalten in Bereitschaft
V. **RDS**

Bedienungselemente und Funktionen


A
B
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I
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K
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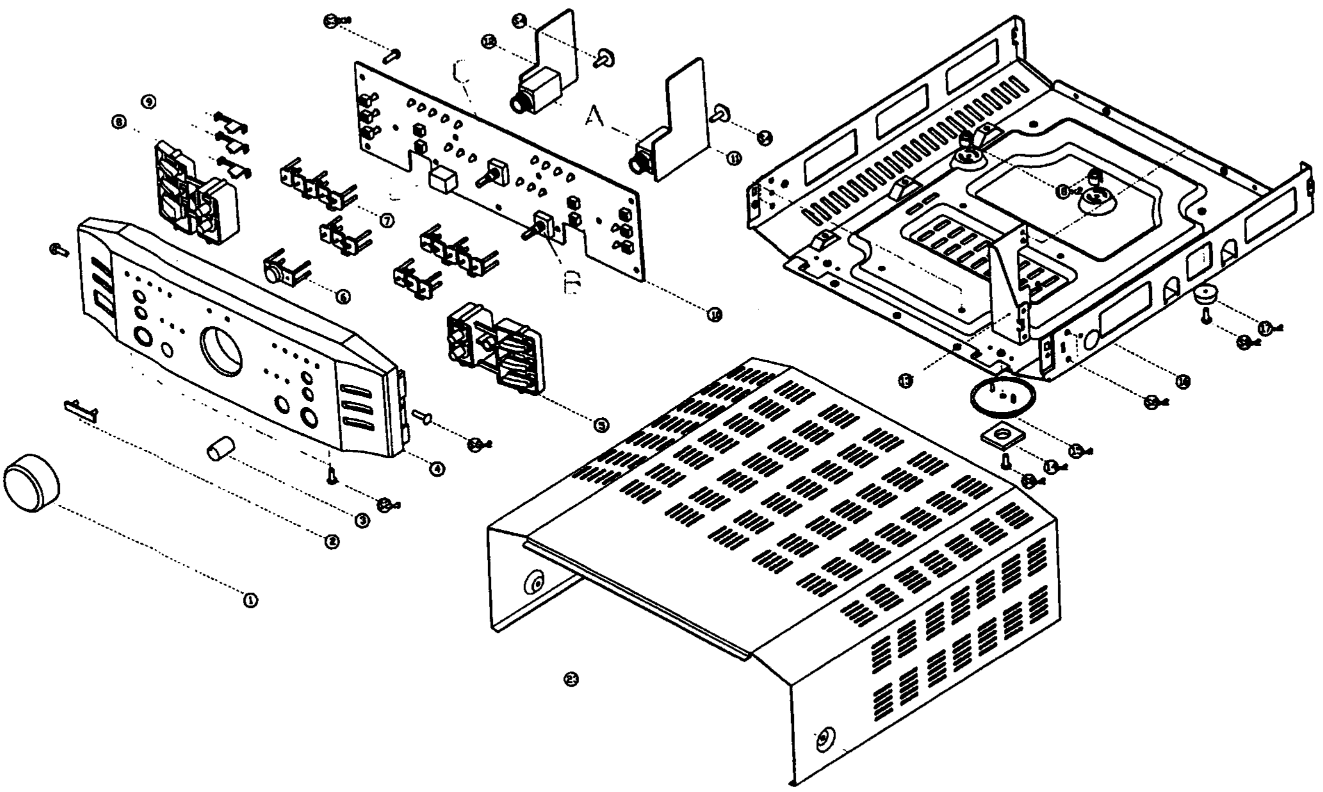
M
N
O
P
Q
R
S
T
U
V
POWER
ON
STAND BY
OFF
SLEEP
VCR
AUX
RDS
DIMMER
CHANNEL
FM/AM
CD/TUNER 10 KEY
1
2
3
4
5
6
7
8
9
0
DECK
CD
CLEAR
PRGM
MUSIC SKIP
SEARCH
REPEAT
1/ALL
A-B
REC
SURR
ON/OFF
SURR M.
CENTER M.
EQ MODE
MUTE
DELAY TIME
CENTER LEVEL
REAR LEVEL
VOLUME
RDS
DELTA 404

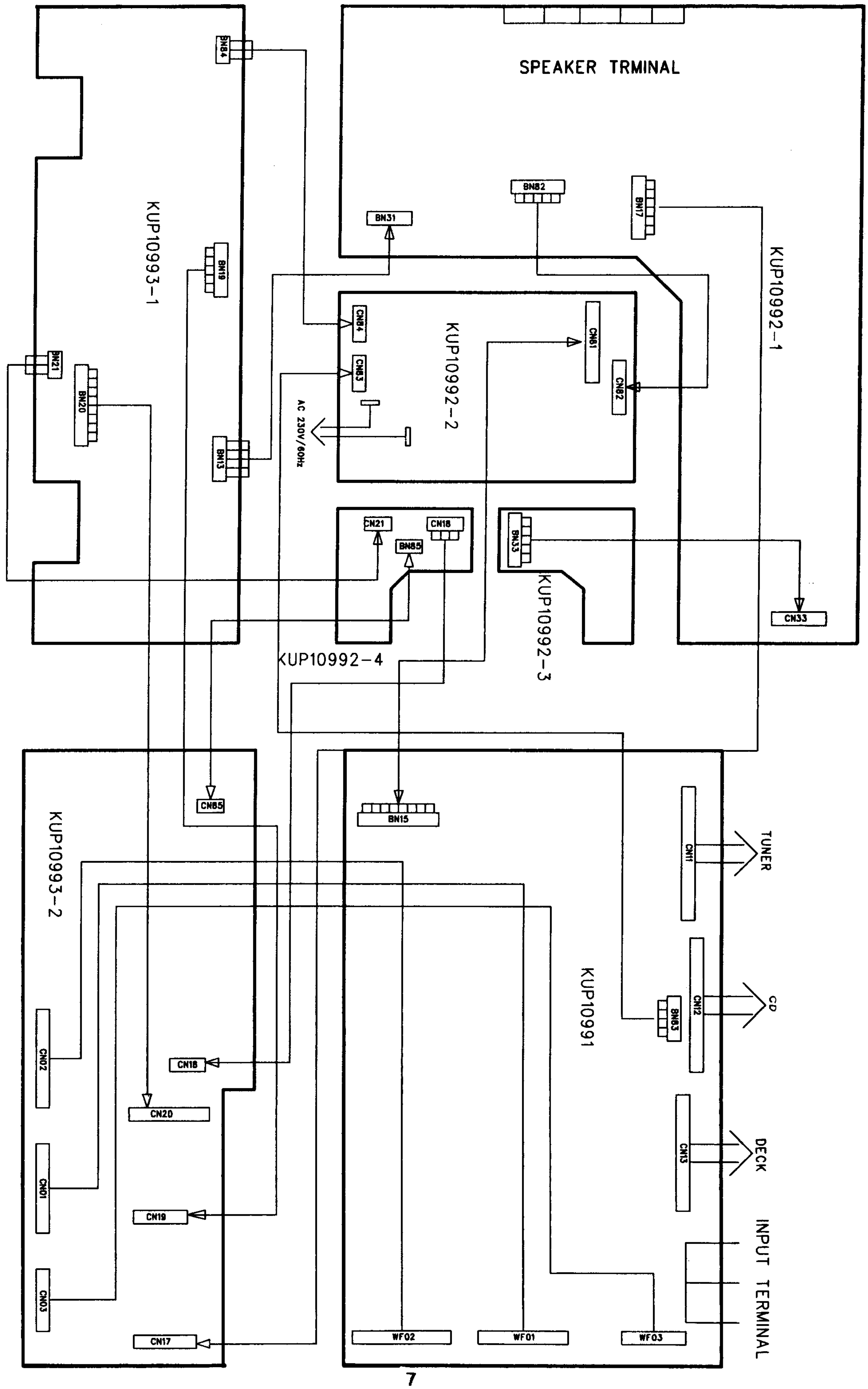
EXPLOSION VERSTÄRKER



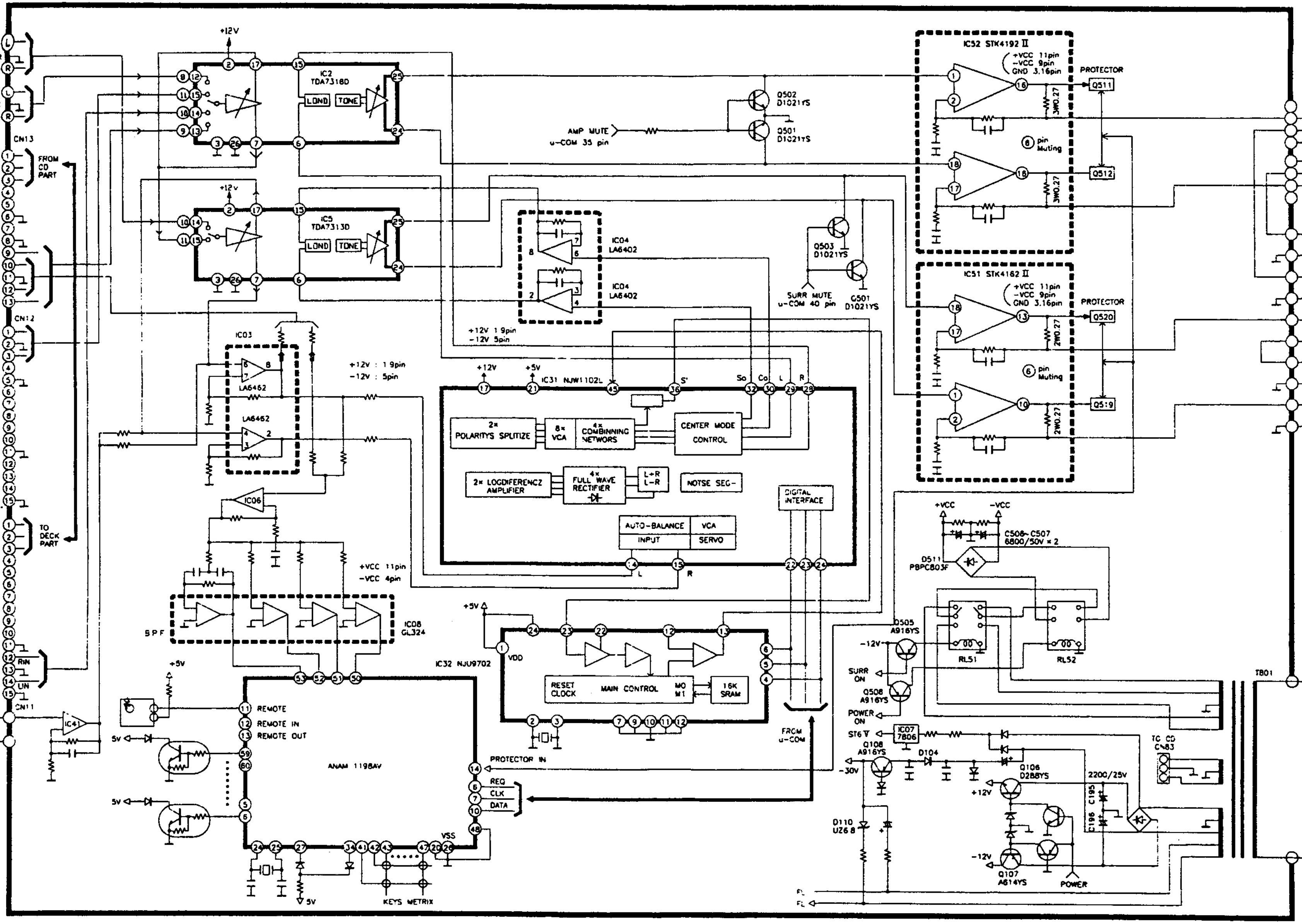
IC71(ANAM1198AV)

PIN No.	PIN NAME	I/O	DESCRIPTION	REMARK
59~61		I/O	CENTER MODE INDICATOR	
62, 63	P70~P77	I/O	62 PIN ON : H, 63 PIN OFF : H	
64	P00~P04	I/O	TEST TONE INDICATOR	
1~7		I/O	SURR ON/OFF, SURR MODE INDICATOR	
8, 9, 10	P05 P07	I/O	DISPLAY CONTROL DATA BUS (8 PIN:REQ, 9PIN:CLOCK, 10 PIN : DATA)	
11	INT O		SENSOR REMOTE INPUT	
12	INT I		BUS LINE REMOTE INPUT	
13	INT2/TC1		BUS LINE REMOTE OUTPUT	
15, 16	P14, P15	O	15 PIN : DATA, 16 PIN : CLK	FOR TDA7313
17, 18	P16, P17	O	17 PIN : DATA, 18 PIN : CLK	FOR TDA7318
23	RESET	O	MI COM RESET PORT	
24, 25	XIN, XOUT	I/O	CRYSTAL INPUT/OUTPUT	
27~31	P30~P34	O	FUNCTION LED DRIVE	
32~34	P35~P37	O	DELAY TIME LED DRIVE	
35	P40	O	AMP MUTE PORT	ACTIVE "L"
36	P41	O	POWER ON/OFF PORT	ACTIVE "L"
37, 39, 19	P42, P44, P20	O	EQ DISPLAY (19 PIN:STB, 37 PIN:CLK, 39 PIN:DAT)	TO TUNER MI COM
40	P45	O	SURR MUTE PORT	ACTIVE "L"
41~47	P46,P47,P50~P54	I/O	KEY METRIX	
49	VAREF		V ANALOG REFERENCE PORT	
50~53	P60~P63	I/O	160Hz, 400Hz, 2.5KHz, 6.3KHz, A/D CONVERTOR (EQ. LEVEL)	TO TUNER MI COM
56, 57	P66, P67	I	VR UP/DOWN DATA INPUT	
58	GND		+5V	
20, 26, 48	VSS		GND	

VERDRAHTUNGSPLAN VERSTÄRKER

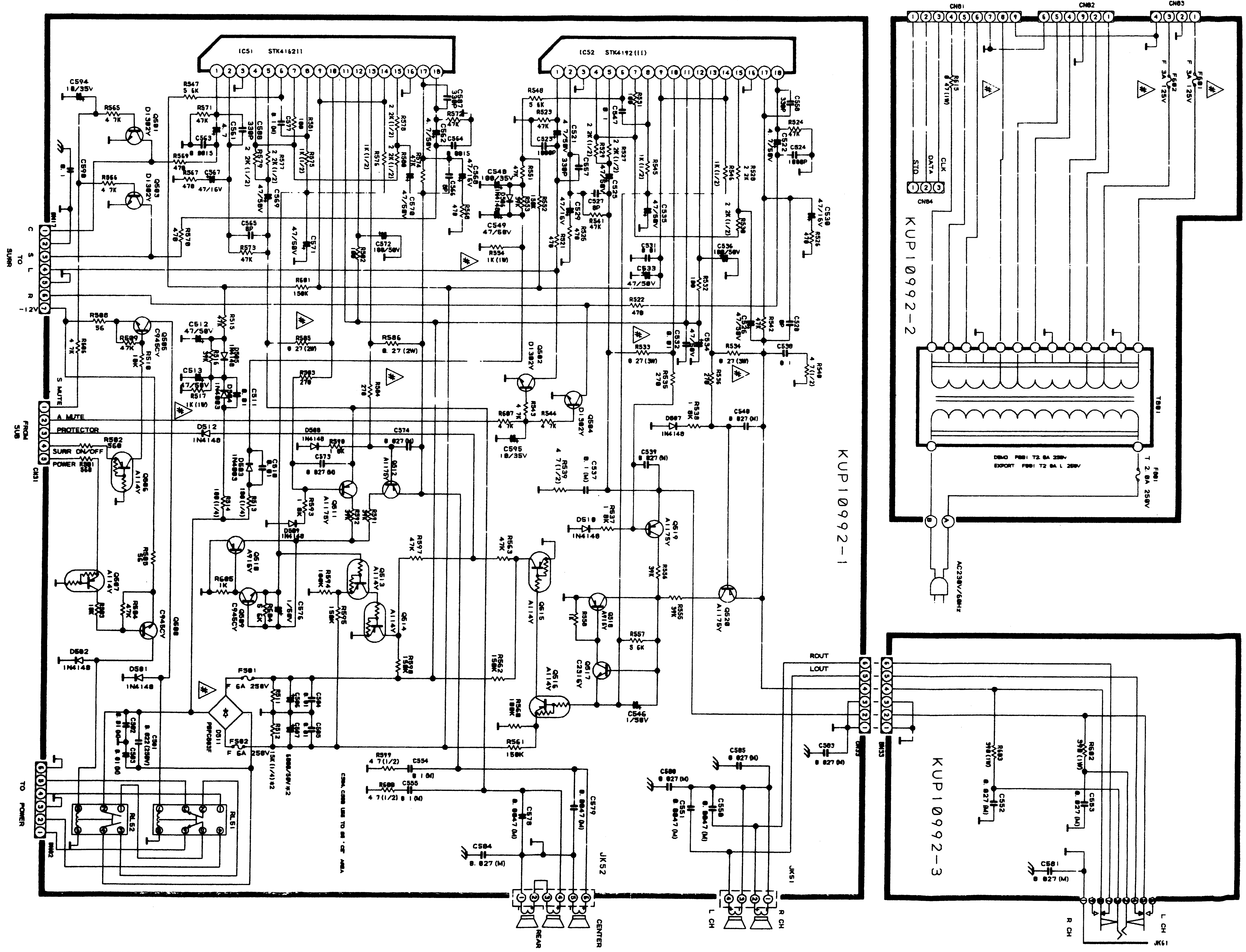

SPEAKER TRMINAL
KUP10993-1
KUP10992-1
KUP10992-2
KUP10992-3
KUP10992-4
KUP10993-2
KUP10991
BN4
BN19
BN21
BN20
BN13
BN31
BN82
BN17
CN84
CN83
CN81
CN82
AC 230V/60Hz
CN21
CN18
BN85
BN33
CN33
CN85
BN15
CN11
TUNER
CN12
CD
BN83
CN13
DECK
INPUT TERMINAL
CN02
CN18
CN20
CN01
CN19
CN03
CN17
WF02
WF01
WF03

BLOCK DIAGRAM

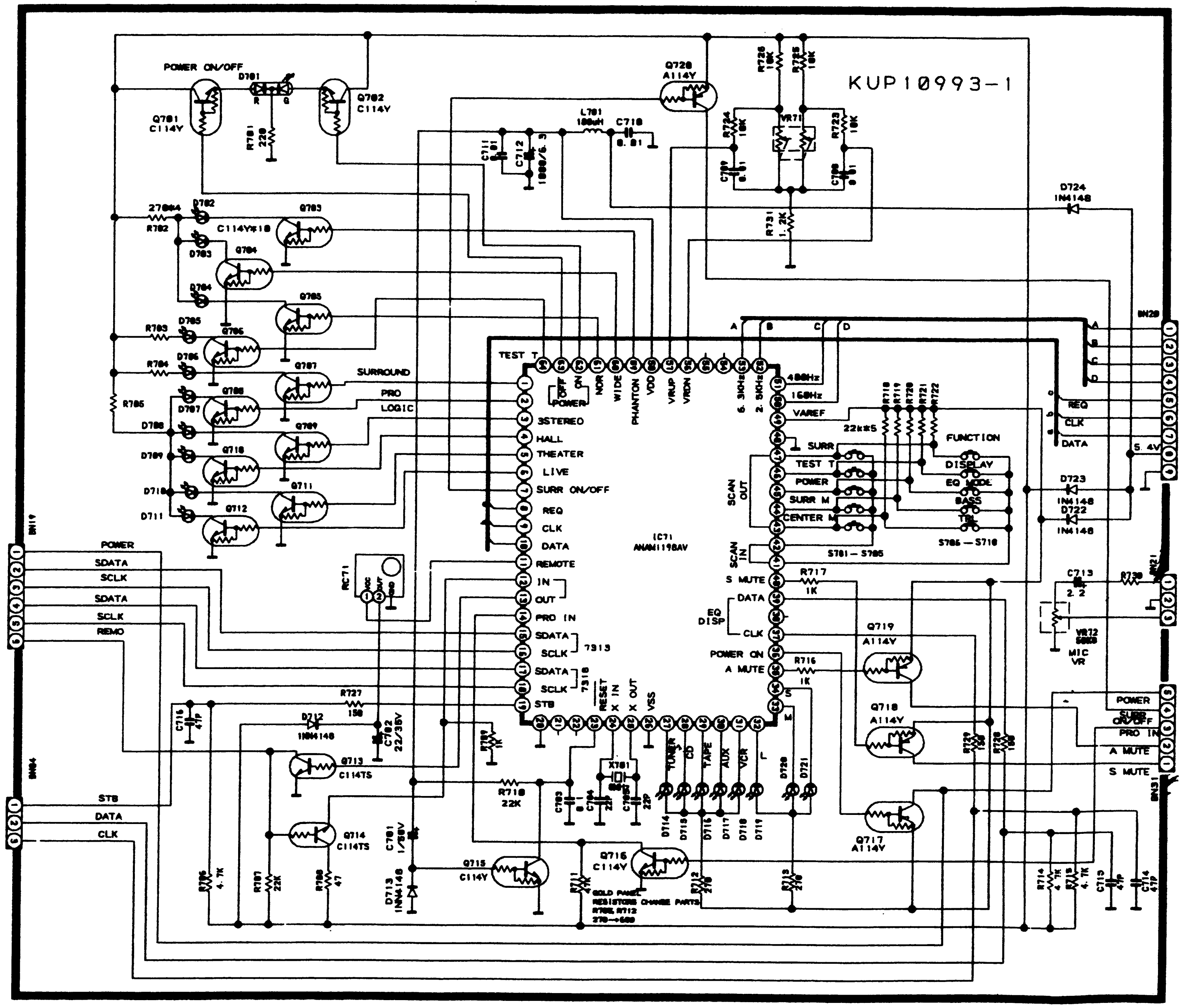

VCR
AUX
CN13
CLK
DATA
STB
REMO
ST 12V
+12V
PBL
RELL
G
RECR
PBR
FROM CD PART
DECK PART
CN12
LIN
RIN
+12V
GRID
FL
REMO
STS 4V
STB
DATA
CLK
EQ
TUNER PART
TO DECK PART
CLK
DATA
STB
REMOTE
AC
G
FL
GRID
CD PART
RIN
LIN
CN11
MIC JACK
IC41
+12V
IC2 TDA7318D
IC5 TDA7313D
LOND
TONE
Q502 D1021YS
Q501 D1021YS
AMP MUTE u-COM 35 pin
Q503 D1021YS
Q501 D1021YS
SURR MUTE u-COM 40 pin
IC04 LA6402
+12V 1 9pin
-12V 5pin
IC03
LA6462
IC06
+VCC 11pin
-VCC 4pin
BPF
IC08 GL324
IC31 NJW1102L
So
Co
L
R
S'
2× POLARITYS SPLITIZE
8× VCA
4× COMBINNING NETWORS
CENTER MODE CONTROL
2× LOGDIFERENCZ AMPLIFIER
4× FULL WAVE RECTIFIER
L+R
L-R
NOTSE SEG-
DIGITAL INTERFACE
AUTO-BALANCE INPUT
VCA SERVO
+5V
IC32 NJU9702
VDD
RESET CLOCK
MAIN CONTROL
M0 M1
16K SRAM
FROM u-COM
REMOTE
REMOTE IN
REMOTE OUT
ANAM 1198AV
PROTECTOR IN
REQ
CLK
DATA
VSS
5V
KEYS METRIX
IC52 STK4192 II
+VCC 11pin
-VCC 9pin
GND 3.16pin
PROTECTOR
Q511
Q512
8 pin Muting
3W0.27
IC51 STK4162 II
Q520
Q519
6 pin Muting
2W0.27
HEADPHONE JACK
8Ω LCH
FRONT
8Ω
REAR
8Ω CENTER
+VCC
-VCC
C506~C507 6800/50V × 2
D511 PBPC803F
Q505 A916YS
-12V
RL51
RL52
SURR ON
Q508 A916YS
POWER ON
ST6 V
IC07 7806
Q108 A916YS
D104
-30V
Q106 D288YS
+12V
2200/25V
C195
C196
TC CD CN83
D110 UZ6.8
-12V
Q107 A614YS
POWER
FL
T801
F801 2A 250V
230V 50Hz

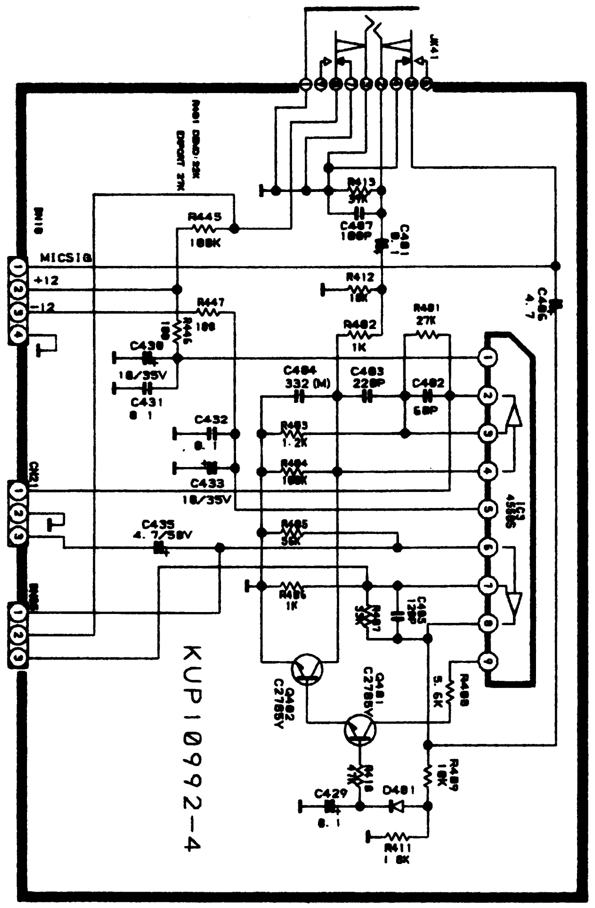
VERSTÄRKER

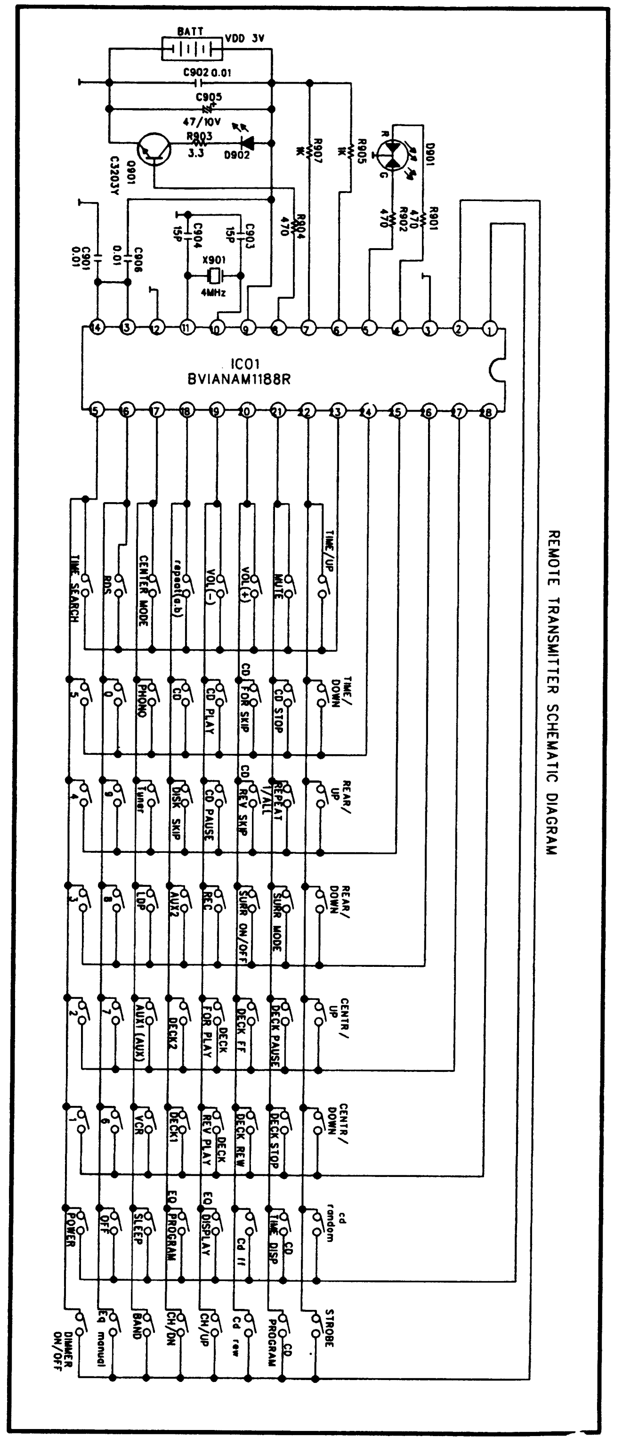
VERSTÄRKER AV-404


IC51 STK416211
IC52 STK4192(II)
CN81
CN82
CN83
CN84
STD
DATA
CLK
KUP10992-1
KUP10992-2
KUP10992-3
TO SURR
C S L R -12V
FROM SUB
S MUTE
A MUTE
PROTECTOR
SURR ON/OFF
POWER
CN31
TO POWER
RL51
RL52
D511 PBPC803F
F501 F 6A 250V
F502 F 6A 250V
F801
F802 F 3A 125V
F803 F 3A 125V
T801
DEMO F801 T2 8A 250V
EXPORT F801 T2 8A L 250V
T 2.0A 250V
AC230V/50Hz
ROUT
LOUT
JK52
REAR
CENTER
JK51
L CH
R CH
JK61

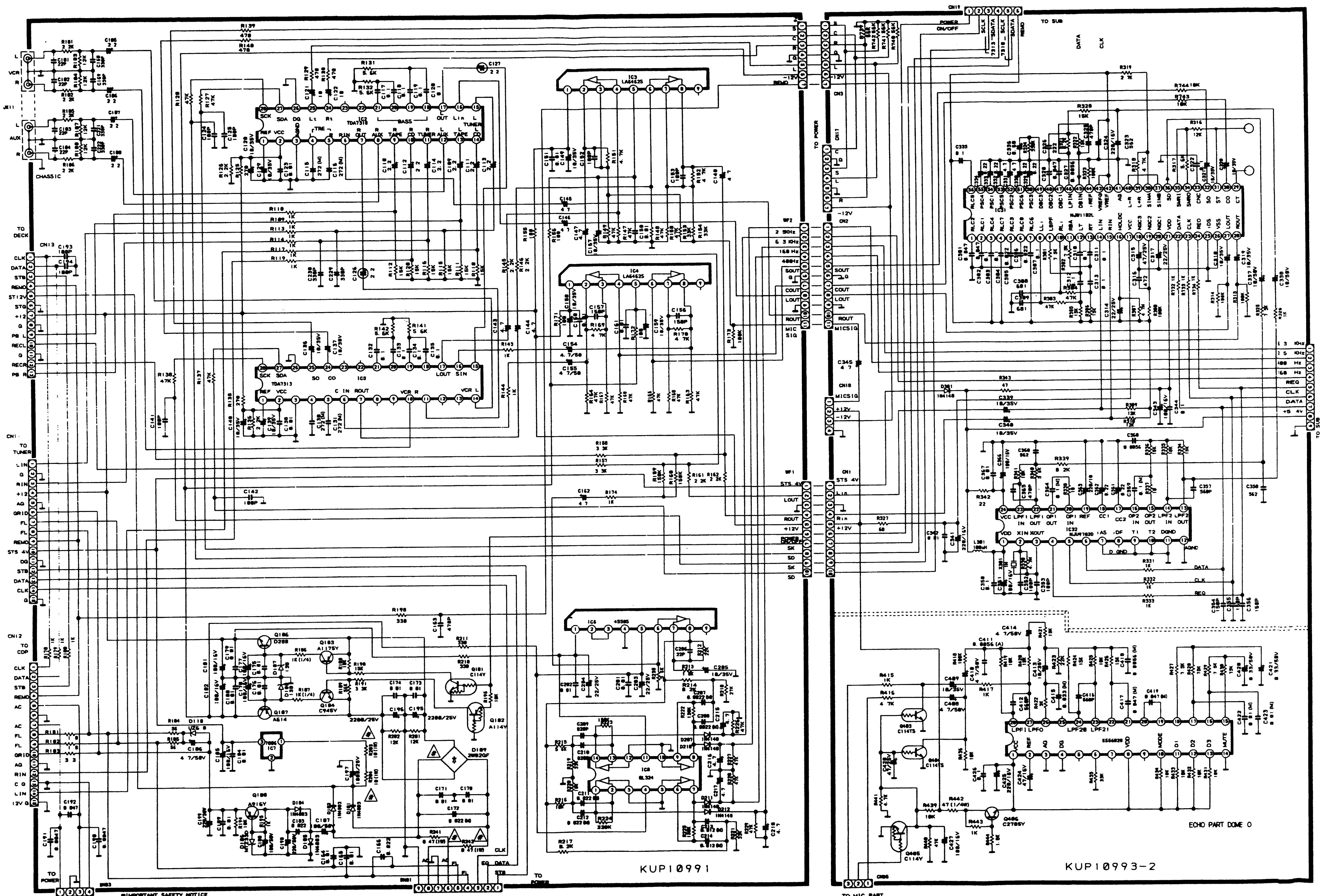
VERSTÄRKER AV-404


KUP10993-1
POWER ON/OFF
D701
Q701 C114Y
Q702 C114V
Q728 A114Y
L701 100uH
C718
VR71
C711
C712
C709
C708
R724
R722
R731 1.2K
D724 1N4148
Q703
Q704
Q705
Q706
Q707
Q708
Q709
Q710
Q711
Q712
C114Yx10
R702
R703
R704
R705
SURROUND
PRO
LOGIC
TEST T
POWER
3STEREO
HALL
THEATER
LIVE
SURR ON/OFF
REQ
CLK
DATA
REMOTE
IN
OUT
PRO IN
SDATA
SCLK
STB
7313
7318
NOR
WIDE
PHANTON
VDD
VRUP
VRDN
6.3KHz
2.3KHz
400Hz
160Hz
VAREF
SURR
TEST T
POWER
SURR M
CENTER M
S701 — S705
S706 — S710
FUNCTION
DISPLAY
EQ MODL
BASS
22k×5
SCAN OUT
SCAN IN
S MUTE
DATA
CLK
EQ DISP
POWER ON
A MUTE
IC71 AN4M1198AV
RC71
R717 1K
R716 1K
Q719 A114V
Q718 A114V
Q717 A114V
Q713 C114TS
Q714 C114TS
Q715 C114Y
Q716 C114Y
R727 150
D712 1N4148
C702 22/35V
C715 47P
R718 22K
X701
RESET
X IN
X OUT
VSS
TUNER
CD
TAPE
AUX
VCR
D714
D715
D716
D717
D718
D719
D720
D721
D713 1N4148
C701 1/50V
R706 4.7K
R701 22K
R709 47
R711
R712
R713
R714 4.7K
R715 4.7K
C713 2.2
VR72 50K
MIC VR
D723 1N4148
D722 1N4148
REQ
CLK
DATA
5 4V
POWER
SURR ON/OFF
PRO IN
A MUTE
S MUTE
CN119
CN104
POWER
SDATA
SCLK
SDATA
SCLK
REMO
STB
DATA
CLK
A B C D
GOLD PANEL RESISTORS CHANGE PARTS R706, R712 270→680


KUP10992-4
MICSIG
+12
-12
R445 100K
R447
R446 100
C430
C431 0.1
10/35V
C432 0.1
C433 10/35V
C435 4.7/50V
R413 39K
C407 100P
C401
R412 10K
R402 1K
R401 27K
C404 332(M)
C403 220P
C402 68P
R403 1.2K
R404 100K
R405 56K
R406 1K
C406 4.7
IC3 4558
Q402 C2785Y
Q401 C2785Y
C429 0.1
D401
R411 1.5K
R410 47K
R409 10K
R408 5.6K
JK41


REMOTE TRANSMITTER SCHEMATIC DIAGRAM
BATT
VDD 3V
C902 0.01
C905
47/10V
R803 3.3
D902
Q901 C3203Y
R807 1K
R805
D901
R804 470
R801
R802 470
C906 0.01
C901 0.01
C904 15P
C903 15P
X901 4MHz
IC01
BVIANAM1188R
TIME SEARCH
REC
CENTER MODE
repeat(a,b)
VOL(-)
VOL(+)
MUTE
TIME/UP
CD
PHONO
CD PLAY
CD FOR SKP
CD STOP
TIME/DOWN
TUNER
DISK SKP
CD PAUSE
CD REV SKP
REPEAT/ALL
REAR/UP
TAPE
AUX2
REC
SURR ON/OFF
SURR MODE
REAR/DOWN
AUX1(AUX)
DECK2
DECK FOR PLAY
DECK REW
DECK PAUSE
CENTER/UP
VCR
DECK1
DECK REV PLAY
DECK FF
DECK STOP
CENTER/DOWN
POWER
OFF
SLEEP
EQ PROGRAM
EQ DISPLAY
Cd ff
TIME DISP
cd random
DIMMER ON/OFF
Eq manual
BAND
CH/DN
CH/UP
Cd rew
CD PROGRAM
STROBE

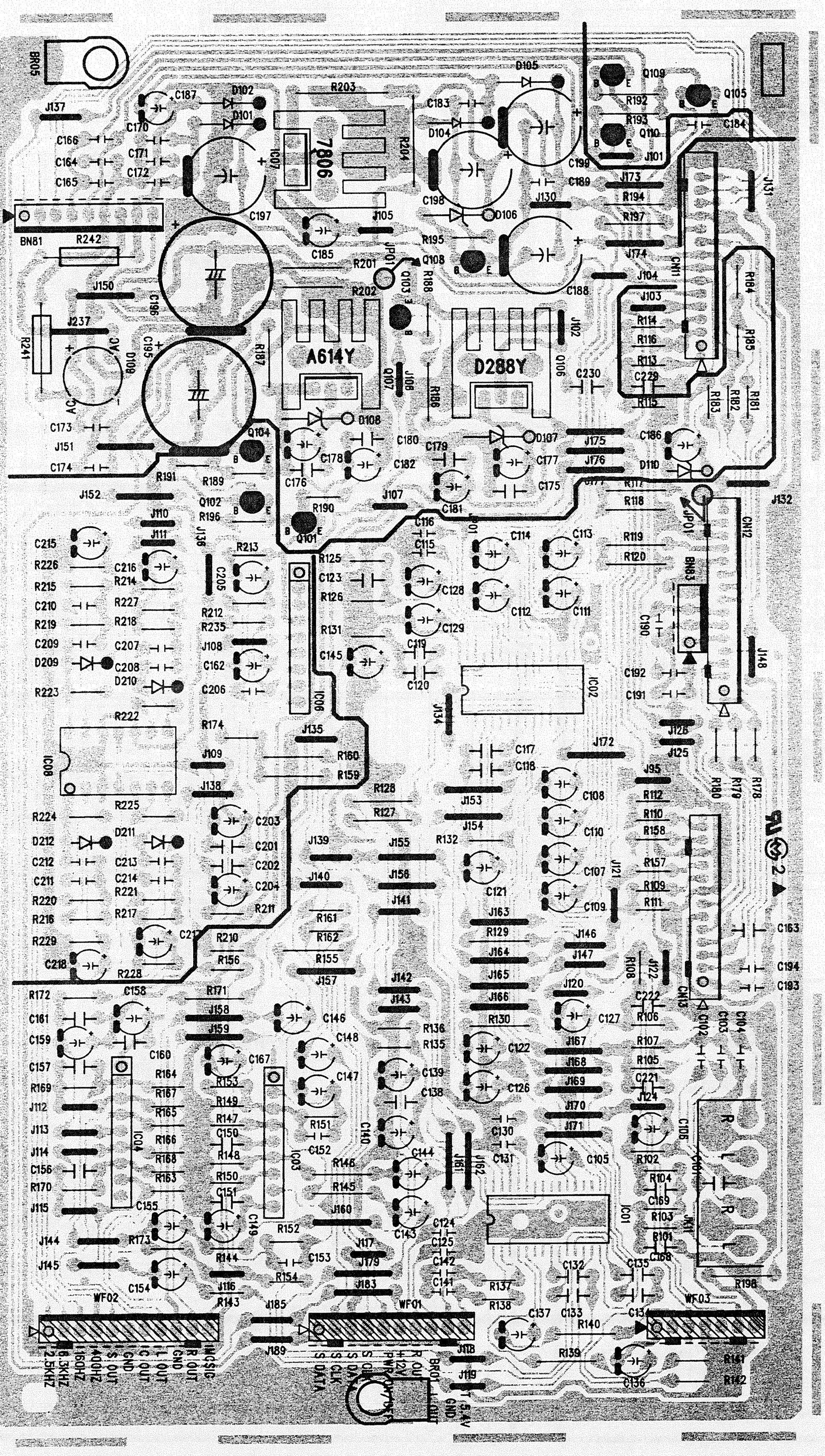
VERSTÄRKER AV-404 DPL

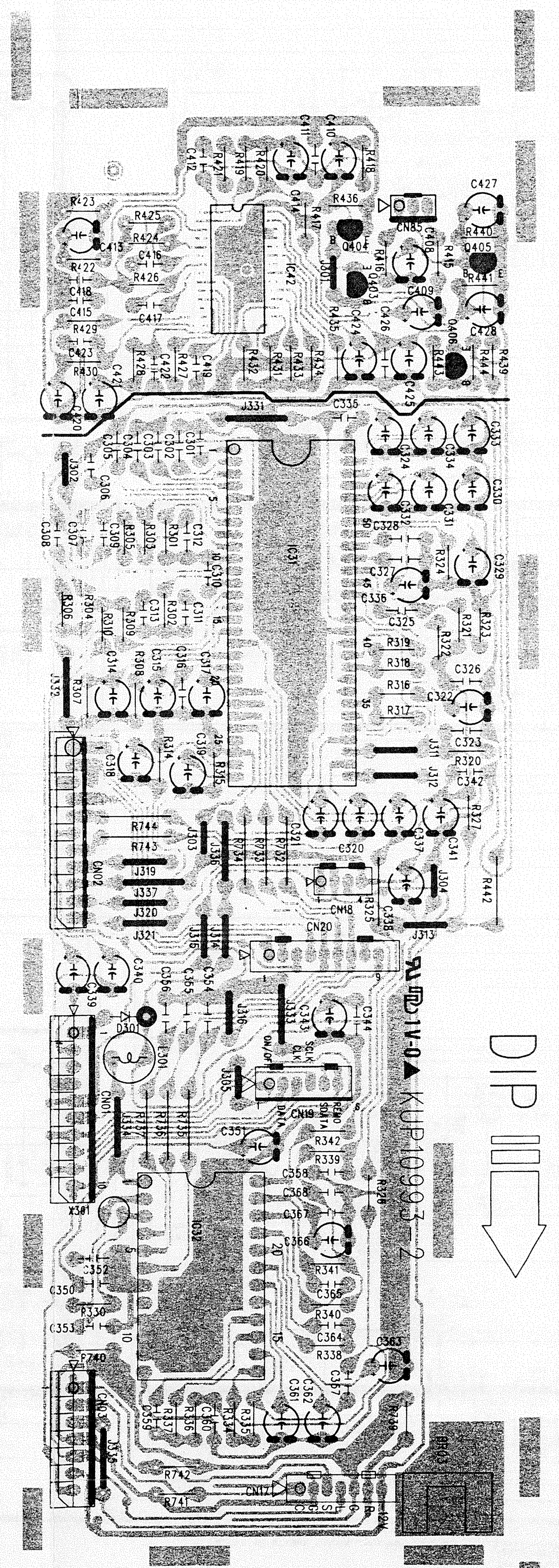


KUP10991
KUP10993-2
ECHO PART DOME 0
TDA7318
TDA7313
LA4562S
NJM1102L
NJM7020
BL324
45305
TO MIC PART
TO SUB
TO POWER
TO DECK
TO TUNER
TO CDP
CHASSIC
VCR
AUX

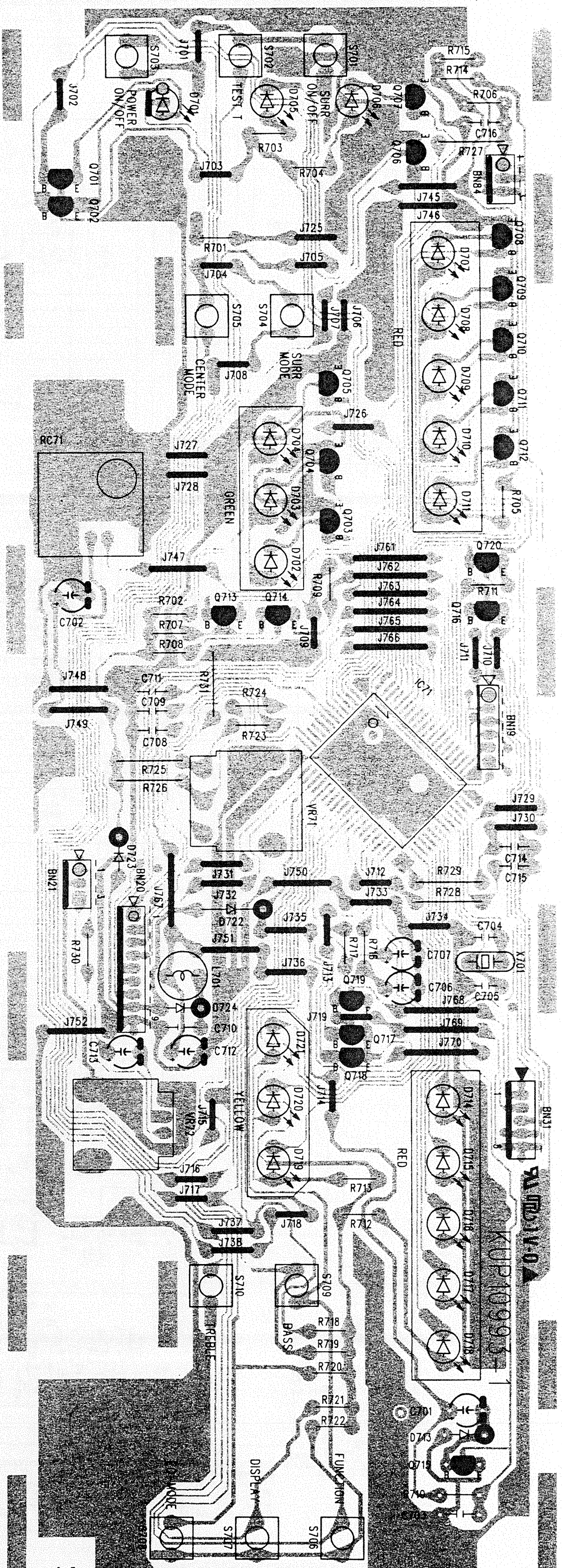
■IMPORTANT SAFETY NOTICE
COMPONETS IDENTIFIED BY ⚠ MARK HAVE SPECIAL CHARACTERISTICS.USE ONLY MANUFACTURER'S SPECIFIED PARTS.
■THE UNIT OF RESISTANCE IS OHM K=1000 OHM,M=1000 KOHM
■THE UNIT OF CAPACITANCE IS MICROFARAD(uF). P=10^{-6} (uF)
■THIS SCHEMATIC DIAGRAM MAY BR MODIFIED AT ANY TIME WITH THE IMPROVEMENT OF PERFORMANCE

PRINTED CIRCUIT BOARDS

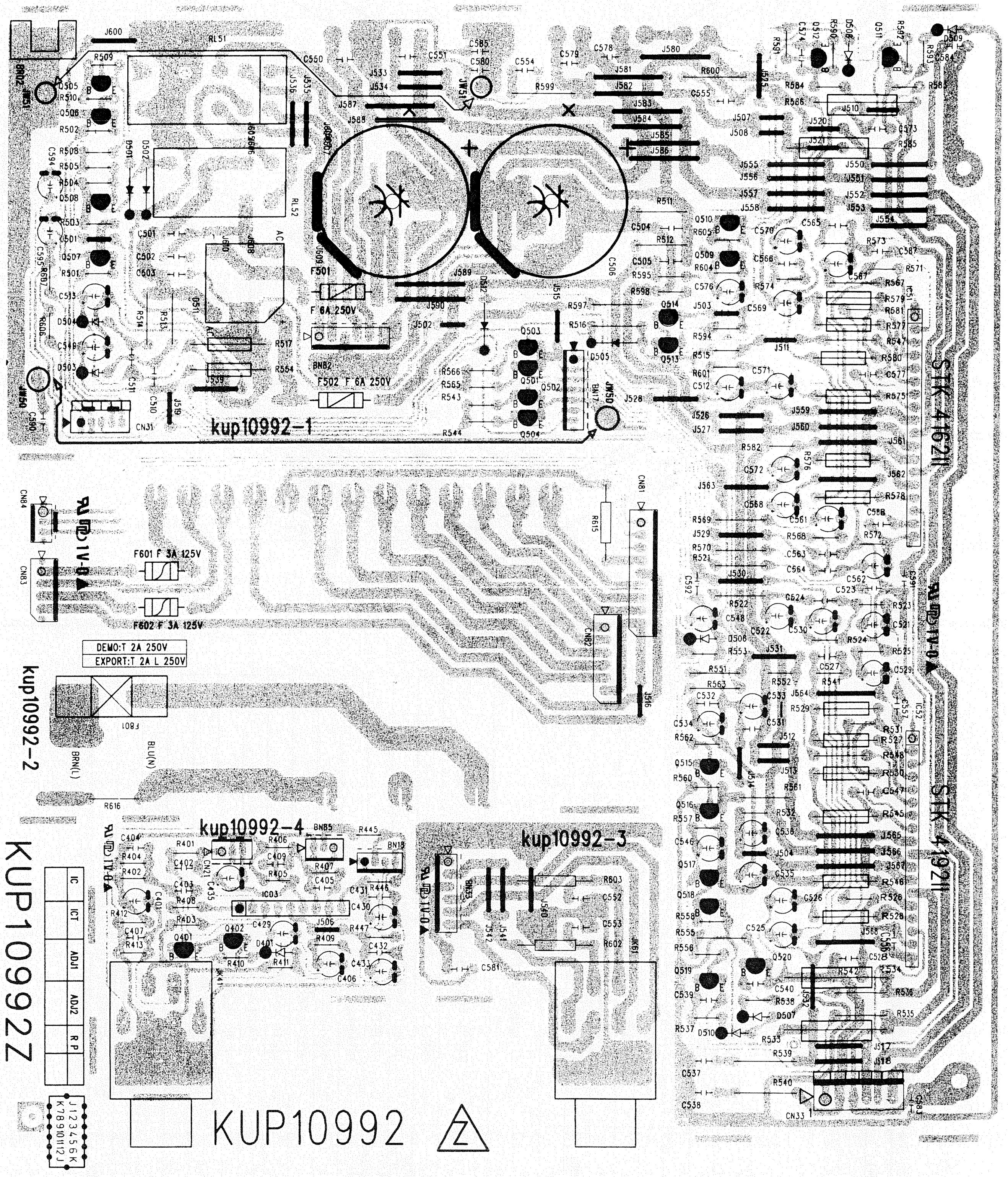




DIP
KUP10993-2



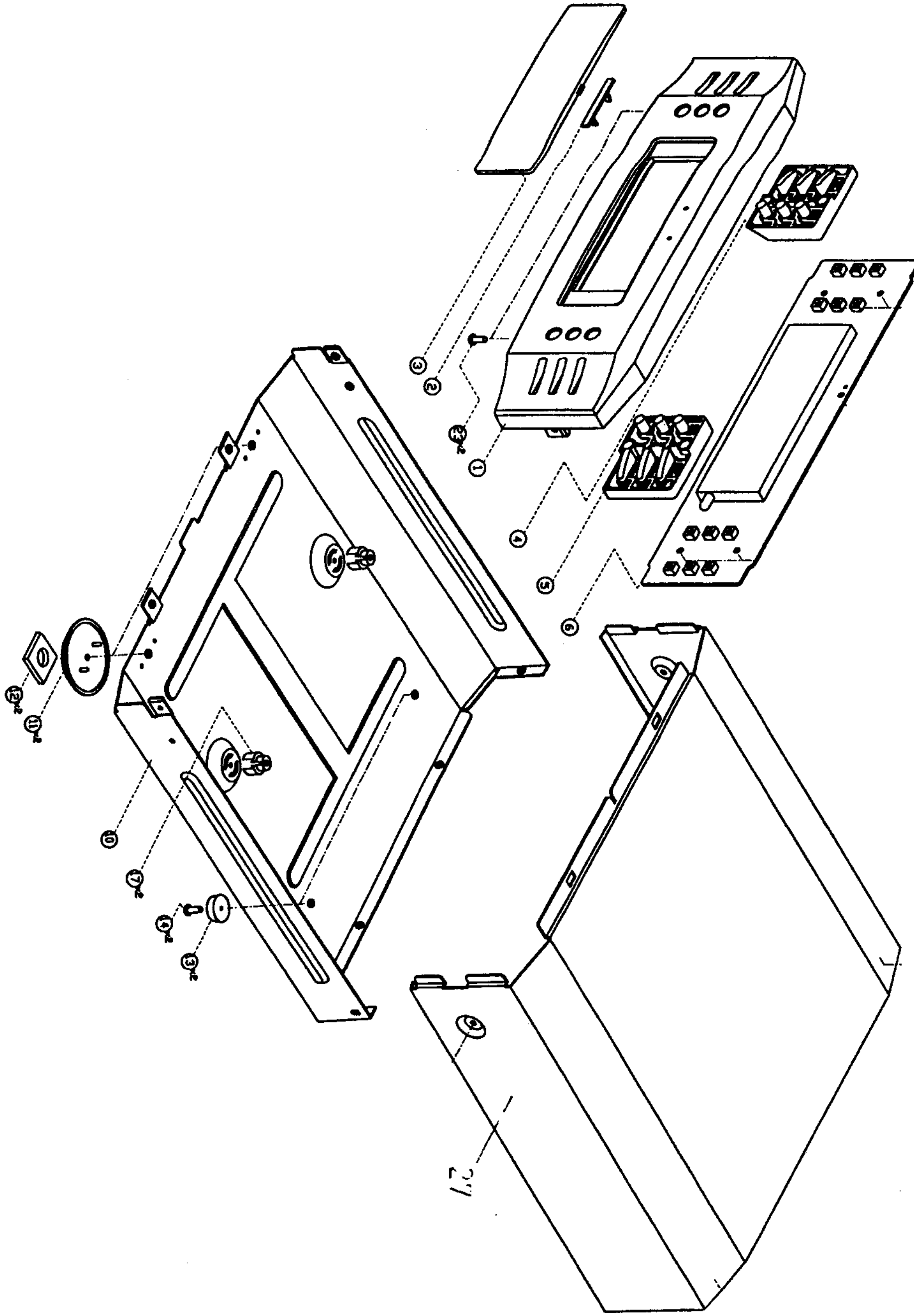
PLATINE ENDSTUFE


kup10992-1
kup10992-2
kup10992-3
kup10992-4
KUP10992Z
KUP10992
Z
STK 4162II
STK 4192II
F501
F 6A 250V
F502 F 6A 250V
F601 F 3A 125V
F602 F 3A 125V
DEMO:T 2A 250V
EXPORT:T 2A L 250V
F801
BRN(L)
BLU(N)
RL51
RL52
CN31
CN33
CN81
CN82
CN83
CN84
BN17
BN82
BN85
BN18
IC51
IC52
IC03
J600
JW50
JW51
IC
ICT
ADJ1
ADJ2
R P
J123456K
K789101112J

IC31: ANAM1201T

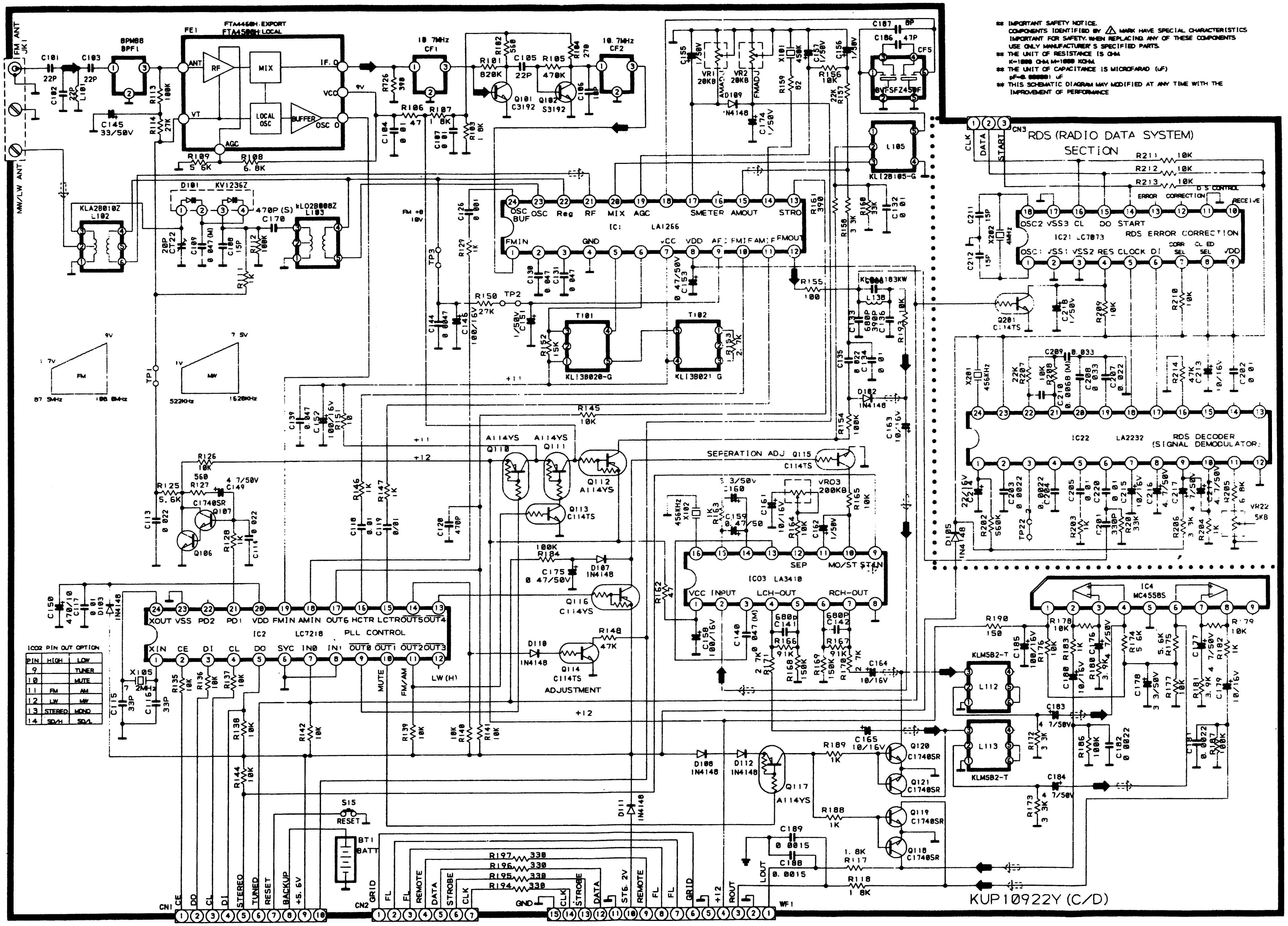
PIN No.	SYMBOL	I/O	DESCRIPTION
1, 25	VDD	I	VDD, 5V ±10%
2~5	KEY0~KEY3	I	KEY METRIX INPUT
98~100	KEY4~KEY9	$\overline{\text{O}}$	KEY METRIX OUTPUT
10, 13	SCK1, SI1, INT3	I	EQ DISPLAY DATA, CLOCK, STROBE
14~17	AIN0~AIN3	I	AREA OPTION
21	AIN7	I	STEREO INDICATOR INPUT
20	AIN6	-	SIGNAL DETECTOR
18	AIN4	-	KOREA MODE. ZIG PORT
22, 30	Vss	I	DEVICE PORT
23	VASS	I	ANALOG DEVICE PORT
24	VAREF	I	REFERENCE VOLT INPUT
26	STOP MODE	I	MEMORY H/L
27	TEST	I	N.C (GND)
28	XTIN	I	32.768KHz CRYSTAL TIME OPERATOR
29	XTOUT	$\overline{\text{O}}$	
31	X IN	I	8.0MHz CRYSTAL μ-COM OPERATOR
32	X OUT	O	
33	$\overline{\text{RESET}}$	I	RESET SIGNAL INPUT
34	P10 (INT0) REMOTE IN	I	REMOTE CONTROL SIGNAL INPUT
35	INT1 REMOTE OUT	$\overline{\text{O}}$	REMOTE CONTROL SIGNAL OUTPUT
36	INT2	I	RDS START INPUT
7	SCK2	I	RDS CLOCK INPUT
8	SI2	I	RDS DATA INPUT
48	P06	$\overline{\text{O}}$	MUTE OUTPUT
42	P00~P03	I	DATA IN PLL IC CONTROL
43	P00~P03	I	CE PLL IC CONTROL
44	P00~P03	O	CLOCK PLL IC CONTROL
45	P00~P03	O	DATA OUT PLL IC CONTROL
50	VKK	-	-30V
51~66	G15~G0	$\overline{\text{O}}$	FIP GRID DRIVE OUTPUT
67~89	S6~S26	$\overline{\text{O}}$	FIP SEGMENT DRIVE OUTPUT

EXPLOSION TUNER



SCHEMATIC DIAGRAM

TUNER


FM ANT JK1
MW/LW ANT
FE1
FTA4460H: EXPORT
FTA4500H: LOCAL
RF
MIX
LOCAL OSC
BUFFER
IF.O
VCC
OSC O
AGC
10.7MHz CF1
10.7MHz CF2
Q101 C3192
Q102 S3192
CF5
SFZ450F
L105
KL12B105-G
KLA28010Z L102
KLD28008Z L103
D101 KV1236Z
IC1 LA1266
OSC BUF
OSC Reg
RF
MIX
AGC
SMETER
AMOUT
STRO
FMIN
GND
VCC
VDD
AF
FMIF
AMIF
FMOUT
T101
T102
KL13B020-G
KL13B021 G
KL00B103KW
L130
SEPERATION ADJ Q115
C114TS
VR03 200KB
IC03 LA3410
SEP
MO/ST
VCC INPUT
LCH-OUT
RCH-OUT
IC2 LC7218 PLL CONTROL
XOUT VSS PD2 PD1 VDD FMIN AMIN OUT6 HCTR LCTR OUT5 OUT4
XIN CE DI CL DO SYC IN0 IN1 OUT0 OUT1 OUT2 OUT3
X105 7.2MHz
MUTE
FM/AM
LW(H)
Q114 C114TS ADJUSTMENT
Q116 C114YS
Q110 A114YS
Q111 A114YS
Q112 A114YS
Q113 C114TS
Q106
Q107 C1740SR
Q117 A114YS
Q118 C1740SR
Q119 C1740SR
Q120 C1740SR
Q121 C1740SR
S15 RESET
BT1 BATT
CN1
CE
DO
CL
DI
STEREO
TUNED
RESET
BACKUP
+5.6V
CN2
GRID
FL
FL
REMOTE
DATA
STROBE
CLK
GND
CLK
STROBE
DATA
STB.2V
REMOTE
FL
FL
GRID
+12
ROUT
LOUT
WF1
CN3
CLK
DATA
START
RDS (RADIO DATA SYSTEM) SECTION
IC21 LC7073
RDS ERROR CORRECTION
OSC2 VSS3 CL DO START
ERROR CORRECTION
RECEIVE
OSC1 VSS1 VSS2 RES CLOCK DI
CORR SEL
CL ED SEL
VDD
Q201 C114TS
X201 456KHz
IC22 LA2232
RDS DECODER (SIGNAL DEMODULATOR)
IC4 MC4558S
L112 KLM5B2-T
L113 KLM5B2-T
VR22 5KB
KUP10922Y (C/D)
FM
MW
87.5MHz
108.0MHz
522KHz
1620KHz

ICO2 PIN OUT OPTION

PIN	HIGH	LOW
9		TUNER
10		MUTE
11	FM	AM
12	LW	MW
13	STEREO	MONO
14	SD/H	SD/L

** IMPORTANT SAFETY NOTICE.
COMPONENTS IDENTIFIED BY ⚠ MARK HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS USE ONLY MANUFACTURER'S SPECIFIED PARTS.

** THE UNIT OF RESISTANCE IS OHM
K=1000 OHM M=1000 KOHM

** THE UNIT OF CAPACITANCE IS MICROFARAD (uF)
pF=0.000001 uF

** THIS SCHEMATIC DIAGRAM MAY MODIFIED AT ANY TIME WITH THE IMPROVEMENT OF PERFORMANCE

➡ FM SIGNAL

⇢ AM (MW) SIGNAL

ICO1 LA1266 (MONO) UNIT V

NO	FM	MW	NO	FM	MW
1	2.5	1.0	13	NC	NC
2	2.5	1.1	14	1.5	1.5
3	2.5	1.1	15	1.5	3.0
4	0	1.1	16	1.3	0.6
5	12.0	12.1	17	0	1.2
6	12.0	12.1	18	2.5	1.1
7	12.0	12.1	19	1.5	1.4
8	NC	NC	20	0	12.5
9	3.0	3.0	21	4.0	3.7
10	NC	NC	22	4.0	3.7
11	NC	NC	23	4.0	3.7
12	3.1	3.1	24	3.1	3.3

IC02 LC7218 (MONO) UNIT V

NO	VOLTAGE	NO	VOLTAGE
1	GND	13	1 (2.8)
2	0	14	0
3	0	15	0
4	0	16	0
5	0	17	0
6	GND	18	0
7	0	19	2.3
8	GND	20	4.5
9	0	21	1.1
10	4.5	22	NC
11	4.5	23	GND
12	4	24	7.2MHz

IC03 LA3410 (MONO) UNIT V

NO	VOLTAGE	NO	VOLTAGE
1	8.8	9	0 (3.0)
2	3.0	10	3.0
3	3.0	11	3.0
4	4.5	12	3.0
5	3.0	13	3.0
6	3.0	14	3.0
7	4.5	15	3.0
8	GND	16	3.0

IC21 LC7073 (RDS ON) UNIT V

NO	VOLTAGE	NO	VOLTAGE
1	4MHz	10	OPEN
2	GND	11	GND
3	GND	12	OPEN
4	4.8	13	OPEN
5	DATA	14	DATA
6	DATA	15	DATA
7	4.8	16	DATA
8	4.8	17	DATA
9	4.8	18	GND

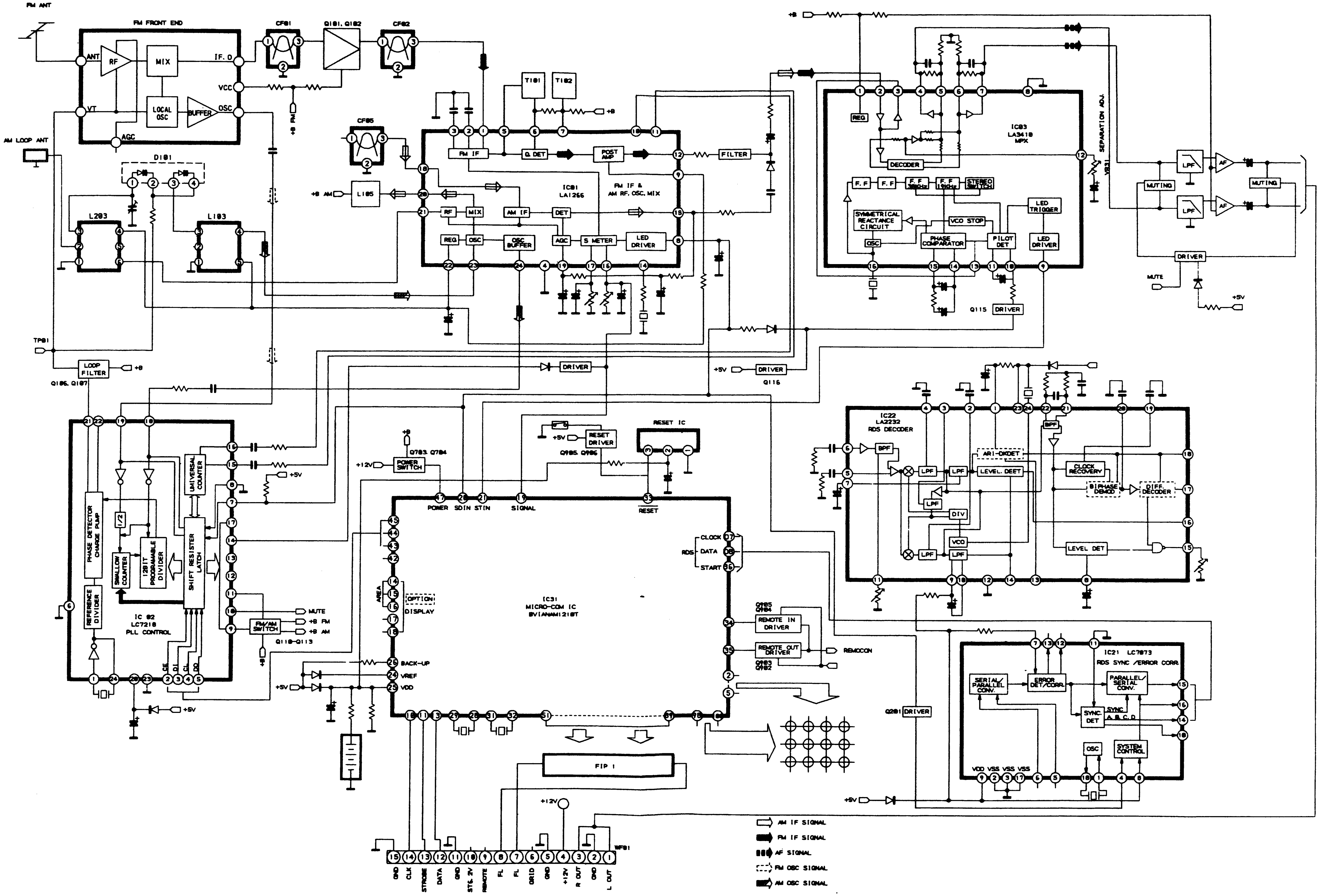
IC22 LA2232 (RDS ON) UNIT V

NO	VOLTAGE	NO	VOLTAGE
1	1.5	13	OPEN
2	1.5	14	OPEN
3	0.5	15	OPEN
4	1.5	16	0.5
5	2.5	17	DATA
6	2.5	18	DATA
7	2.8	19	X
8	1.2	20	1.0
9	1.5	21	2.0
10	0	22	2.0
11	0.5	23	4.8
12	GND	24	456KHz

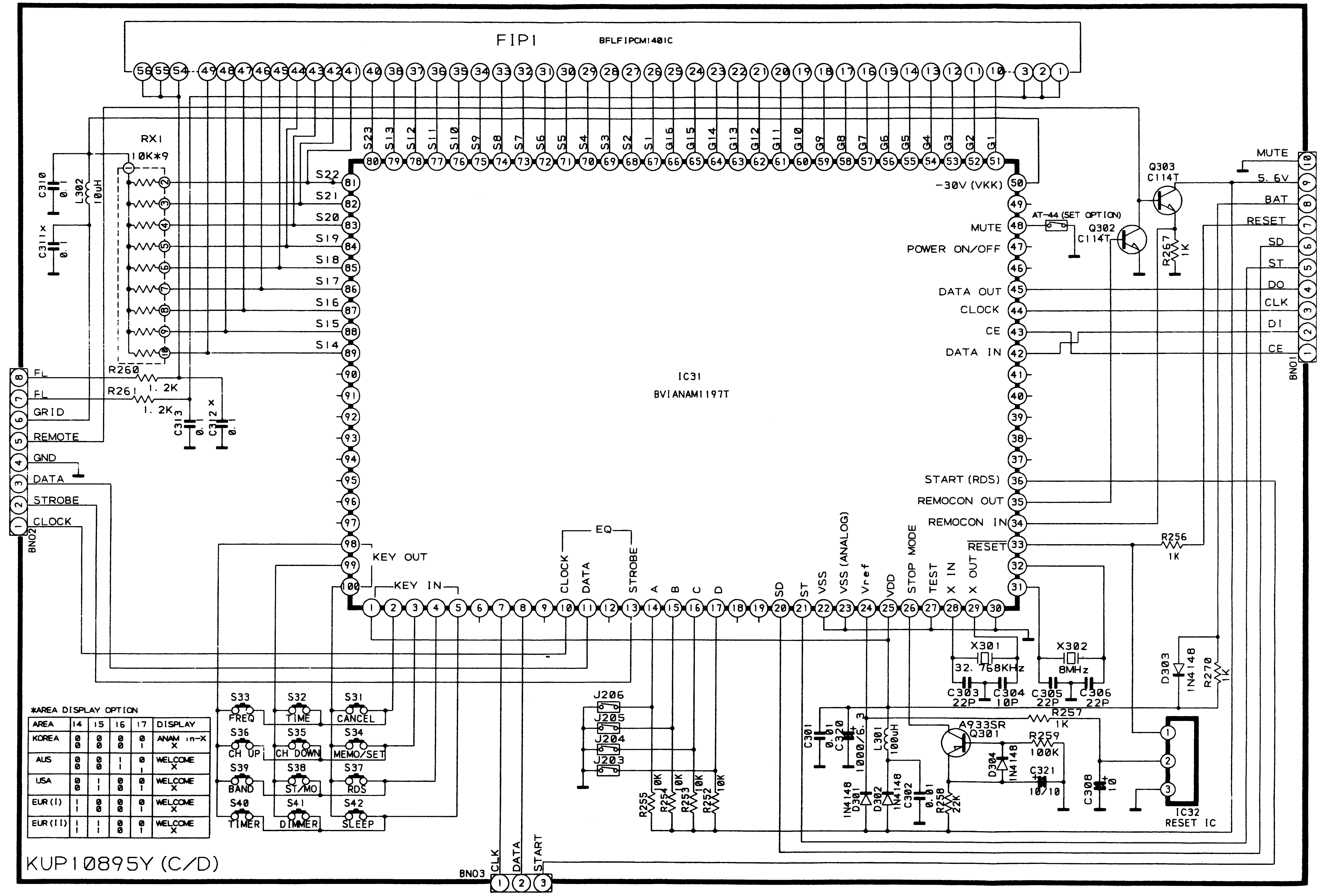
IC04 MC4558S (BUFFER) UNIT V

NO	VOLTAGE
1	14
2	7
3	7
4	6
5	GND
6	6
7	7
8	7
9	14

BLOCK DIAGRAM


FM ANT
FM FRONT END
ANT
RF
MIX
IF. O
VCC
VT
LOCAL OSC
BUFFER
OSC
AGC
CF01
Q101, Q102
CF02
AM LOOP ANT
D101
L203
L103
CF05
+B AM
L105
T101
T102
IC01
LA1266
FM IF &
AM RF, OSC, MIX
FM IF
Q DET
POST AMP
FILTER
RF
MIX
AM IF
DET
REG
OSC
OSC BUFFER
AGC
S METER
LED DRIVER
IC03
LA3410
MPX
REG
DECODER
F. F
STEREO SWITCH
SYMMETRICAL REACTANCE CIRCUIT
OSC
VCO STOP
PHASE COMPARATOR
PILOT DET
LED TRIGGER
LED DRIVER
SEPARATION ADJ.
VR31
Q115
DRIVER
MUTING
LPF
AF
DRIVER
MUTE
+5V
TP01
LOOP FILTER
Q106, Q107
DRIVER
Q116
IC02
LC7218
PLL CONTROL
PHASE DETECTOR CHARGE PUMP
REFERENCE DIVIDER
1/2
SWALLOW COUNTER
128T PROGRAMMABLE DIVIDER
SHIFT RESISTER LATCH
UNIVERSAL COUNTER
CE
CL
DI
DO
FM/AM SWITCH
Q110-Q113
MUTE
+B FM
+B AM
+12V
POWER SWITCH
Q703, Q704
RESET IC
RESET DRIVER
Q905, Q906
POWER
SDIN
STIN
SIGNAL
RESET
IC31
MICRO-COM IC
BVIANAMI218T
AREA
OPTION
DISPLAY
BACK-UP
VREF
VDD
RDS
CLOCK
DATA
START
REMOTE IN DRIVER
REMOTE OUT DRIVER
Q905
Q904
Q903
Q902
REMOCON
FIP 1
IC22
LA2232
RDS DECODER
BPF
LPF
ARI-DKDET
LEVEL DEET
CLOCK RECOVERY
BIPHASE DEMOD
DIFF. DECODER
DIV
VCO
LEVEL DET
Q201
DRIVER
IC21 LC7073
RDS SYNC /ERROR CORR.
SERIAL/PARALLEL CONV.
ERROR DET/CORR.
PARALLEL/SERIAL CONV.
SYNC. DET
SYNC A, B, C, D
OSC
SYSTEM CONTROL
VDD VSS VSS VSS
WF01
GND
CLK
STROBE
DATA
GND
STB. 2V
REMOTE
FL
FL
GRID
GND
+12V
R OUT
GND
L OUT
AM IF SIGNAL
FM IF SIGNAL
AF SIGNAL
FM OSC SIGNAL
AM OSC SIGNAL

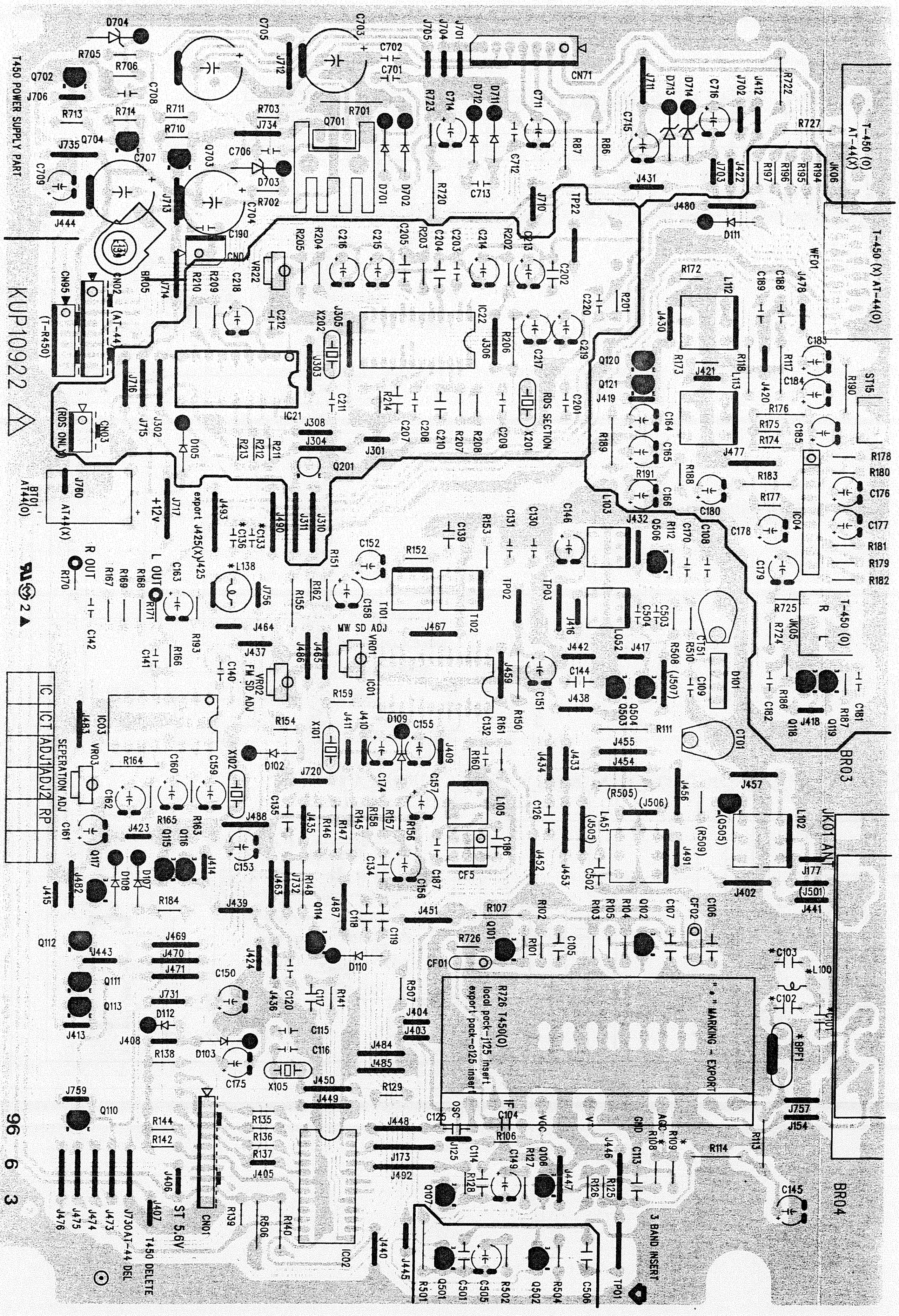
TUNER DISPLAY


FIP1
BFLFIPCM140IC
RX1
10K*9
C310 0.1
L302 10uH
C311x 0.1
S22
S21
S20
S19
S18
S17
S16
S15
S14
S23 S13 S12 S11 S10 S9 S8 S7 S6 S5 S4 S3 S2 S1 G16 G15 G14 G13 G12 G11 G10 G9 G8 G7 G6 G5 G4 G3 G2 G1
R260 1.2K
R261 1.2K
C313 0.1
C312x 0.1
FL
FL
GRID
REMOTE
GND
DATA
STROBE
CLOCK
BN02
KEY OUT
KEY IN
EQ
CLOCK
DATA
STROBE
A
B
C
D
SD
ST
VSS
VSS (ANALOG)
Vref
VDD
STOP MODE
TEST
X IN
X OUT
IC31
BVIANAM1197T
-30V (VKK)
MUTE
POWER ON/OFF
DATA OUT
CLOCK
CE
DATA IN
START (RDS)
REMOCON OUT
REMOCON IN
RESET
AT-44 (SET OPTION)
Q303 C114T
Q302 C114T
R267 1K
R256 1K
MUTE
5.6V
BAT
RESET
SD
ST
DO
CLK
DI
CE
BN01
X301 32.768KHz
X302 8MHz
C303 22P
C304 10P
C305 22P
C306 22P
D303 1N4148
R270 1K
R257 1K
A933SR Q301
R259 100K
D304 1N4148
C321 10/10
C308 10
IC32 RESET IC
C301 0.01
C320 1000/6.3
L301 100uH
D301 1N4148
D302 1N4148
C302 0.01
R258 22K
J206
J205
J204
J203
R255 10K
R254 10K
R253 10K
R252 10K
S33 FREQ
S32 TIME
S31 CANCEL
S36 CH UP
S35 CH DOWN
S34 MEMO/SET
S39 BAND
S38 ST/MO
S37 RDS
S40 TIMER
S41 DIMMER
S42 SLEEP
KUP10895Y (C/D)
BN03
CLK
DATA
START

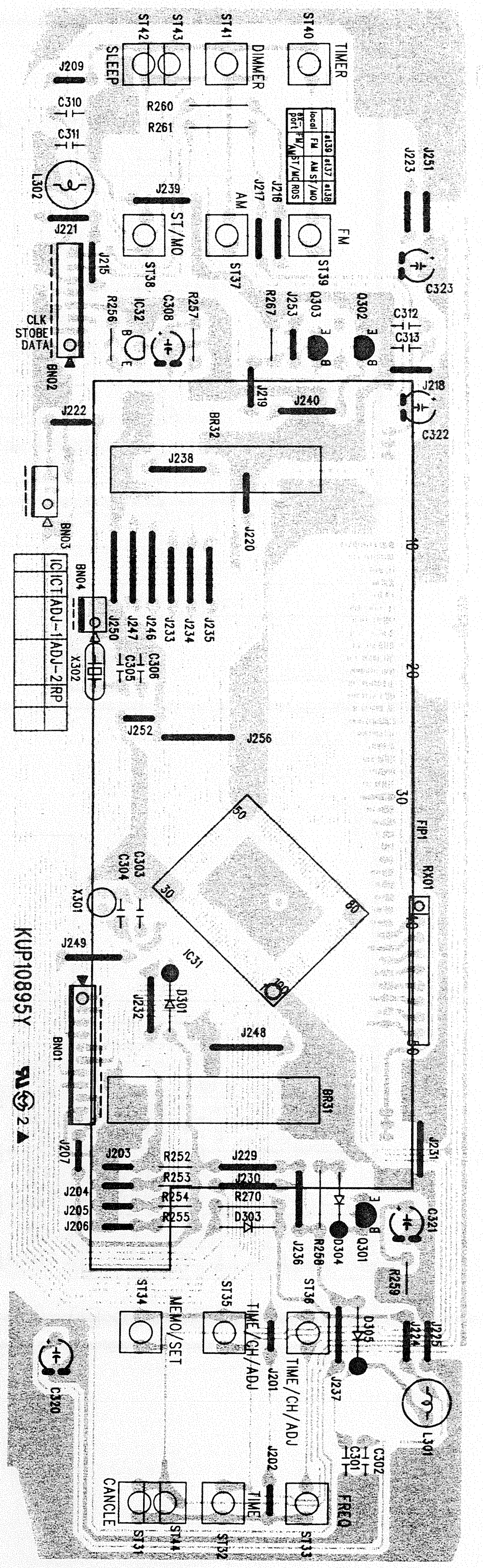
*AREA DISPLAY OPTION

AREA	14	15	16	17	DISPLAY
KOREA	0 0	0 0	0 0	0 1	ANAM in-X X
AUS	0 0	0 0	1 1	0 1	WELCOME X
USA	0 0	1 1	0 0	0 1	WELCOME X
EUR (I)	1 1	0 0	0 0	0 1	WELCOME X
EUR (II)	1 1	1 1	0 0	0 1	WELCOME X

PRINTED CIRCUIT BOARDS



T450 POWER SUPPLY PART
KUP10922
RDS SECTION
MW SD ADJ
FM SD ADJ
SEPERATION ADJ
IC
ICT
ADJ1
ADJ2
RP
* MARKING - EXPORT
R726 T450(O) local pack-J125 insert export pack-Q125 insert
3 BAND INSERT
T450 DELETE
J730 AT-44 DEL
ST 5.6V
+12V
R OUT
L OUT
96 6 3

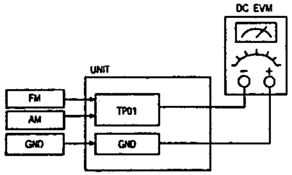


KUP10895Y
TIMER
DIMMER
SLEEP
FM
AM
ST/MO
CLK
STOBE
DATA
IC
ICT
ADJ-1
ADJ-2
RP
MEMO/SET
TIME/CH/ADJ
FREQ
TIME
CANCLE

MEASUREMENTS AND ADJUSTMENTS

1. TUNING FREQUENCY RANGE ADJUSTMENTS

(FM) DC VOLTMETER .... CONNECT TO TEST POINT TP1 and GND
(AM) DC VOLTMETER .... CONNECT TO TEST POINT TP1 and GND

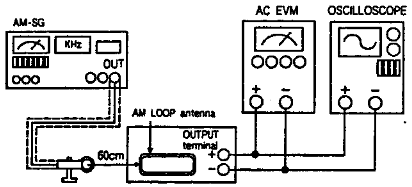

DC EVM
UNIT
FM
AM
GND
TP01
GND

NO.	Band	Frequency	Adjust for	Adjustment
1	FM	87.50MHz	1.5V	L4
2	AM	522KHz	1V	L103

2. AM TRACKING ADJUSTMENT

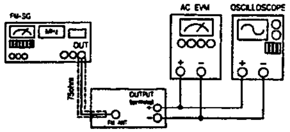
Signal Generator .... Connects to the AM ANT. Coil through the loop antenna.
Adjust for the indication of VTVM of the wave form of scope to be maximum.

BAND	Step	Frequency	Adjust for	Adjustment
AM	1	612KHz	Maximum sensitivity	L102
	2	1503KHz	Maximum sensitivity	CT01
	3	Repeat steps 1 and 2 several times.		


AM-SG
KHz
OUT
AC EVM
OSCILLOSCOPE
AM LOOP antenna
OUTPUT terminal
60cm
+
-

3. FM-RF ADJUSTMENT

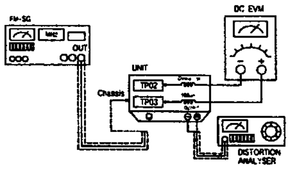
Signal Generator .... Connect to FM ANT JACK (FM IN) through the dummy.


FM-SG
MHz
OUT
AC EVM
OSCILLOSCOPE
OUTPUT terminal
FM ANT

NO.	Frequency	Adjust for	Adjustment
1	90.10MHz	Maximum Sensitivity	L1, L2, L3
2	Repeat step 1 several times.		

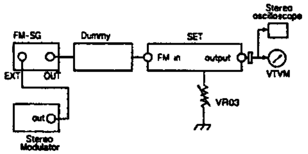
4. FM MONO DISTORTION ADJUSTMENT

DC VOLTMETER ....Connect to TP02(-), TP03(+)
Signal Generator ....Connect to FM ANT Jack (FM IN) through the dummy.
Distortion Meter ....Connect to the output.


FM-SG
MHz
OUT
DC EVM
UNIT
Chassis
TP02
TP03
DISTORTION ANALYSER

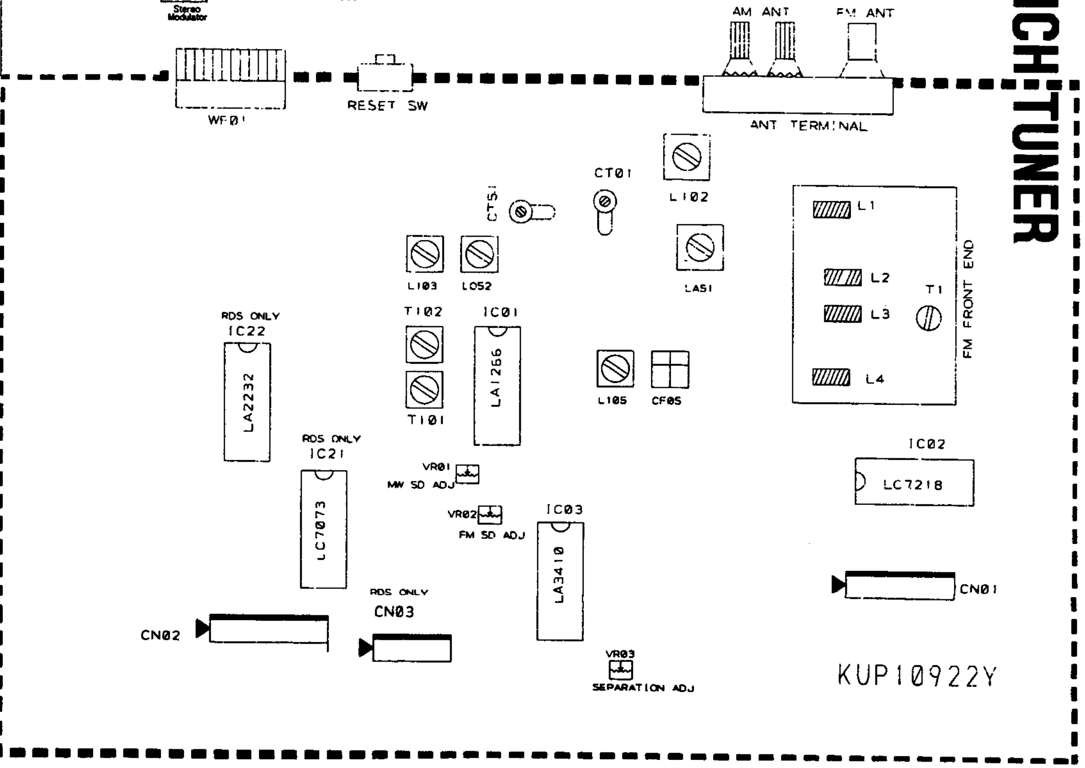
NO.	Frequency	Adjust for	Adjustment
1	100.10MHz	DC Voltmeter 0V	T101
2	100.10MHz	Minimum T.H.D	T102
3	Repeat steps 1 and 2 several times.		

5. FM STEREO SEPARATION

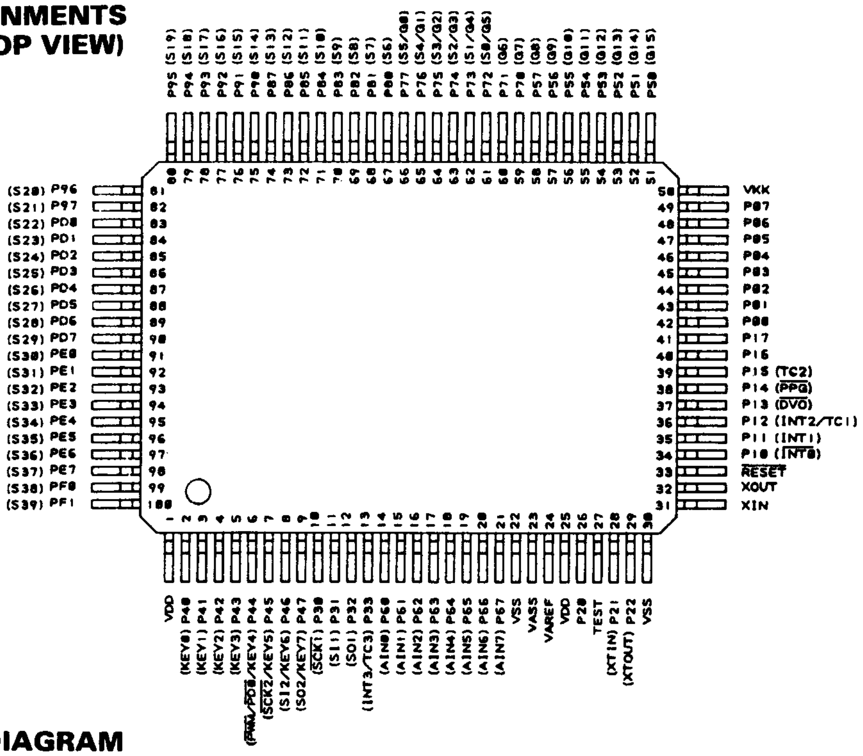

FM-SG
EXT
OUT
Dummy
SET
FM in
output
Stereo oscilloscope
VTVM
VR03
out
Stereo Modulator

Pilot signal	Adjust for	Adjustment
ON	Different of R and L must be maximum	VR03

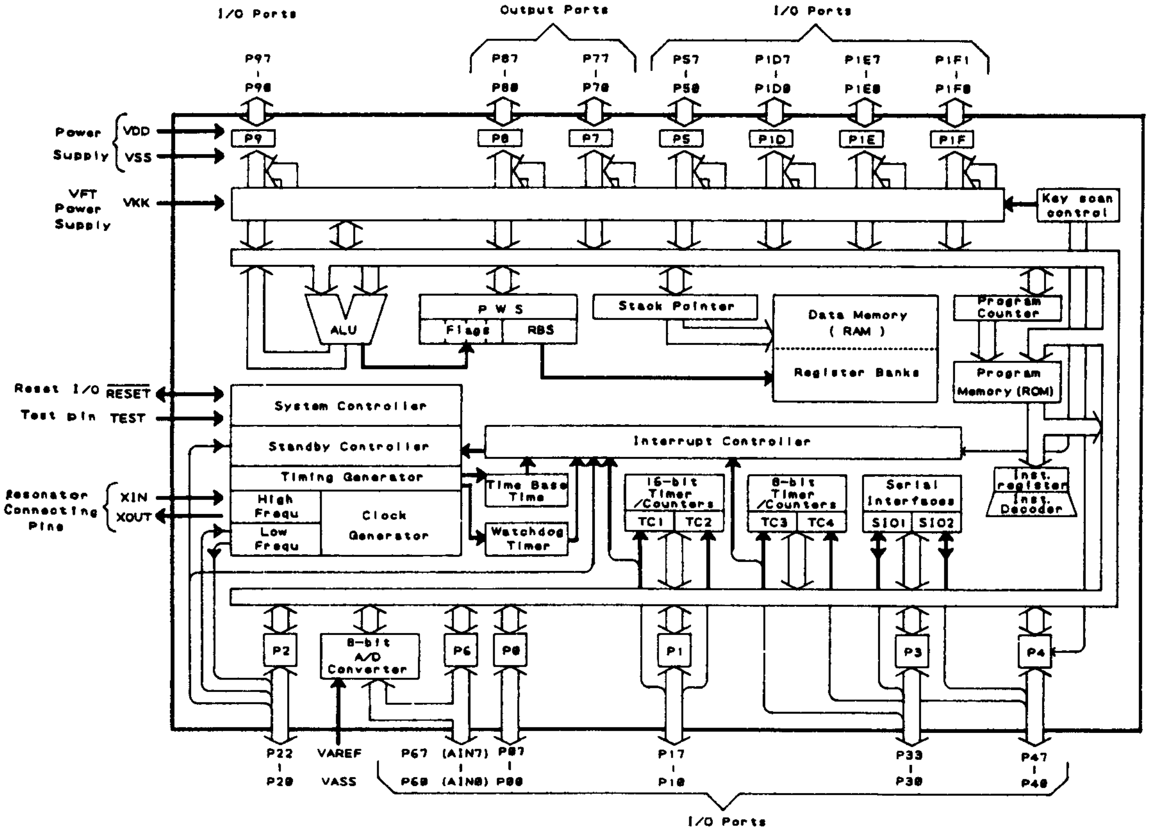
NOTE : In case of adjusting the stereo separation, of input is L (or R) channel, R (or L) channel must be maximum.


AM ANT
FM ANT
ANT TERMINAL
WF01
RESET SW
CT01
CT51
L102
L103
L052
LA51
L1
L2
L3
L4
T1
FM FRONT END
RDS ONLY
IC22
LA2232
T102
T101
IC01
LA1266
L105
CF05
RDS ONLY
IC21
LC7073
VR01
MW SD ADJ
VR02
FM SD ADJ
IC03
LA3410
IC02
LC7218
CN01
CN02
RDS ONLY
CN03
VR03
SEPARATION ADJ
KUP10922Y

PIN ASSIGNMENTS (TOP VIEW)

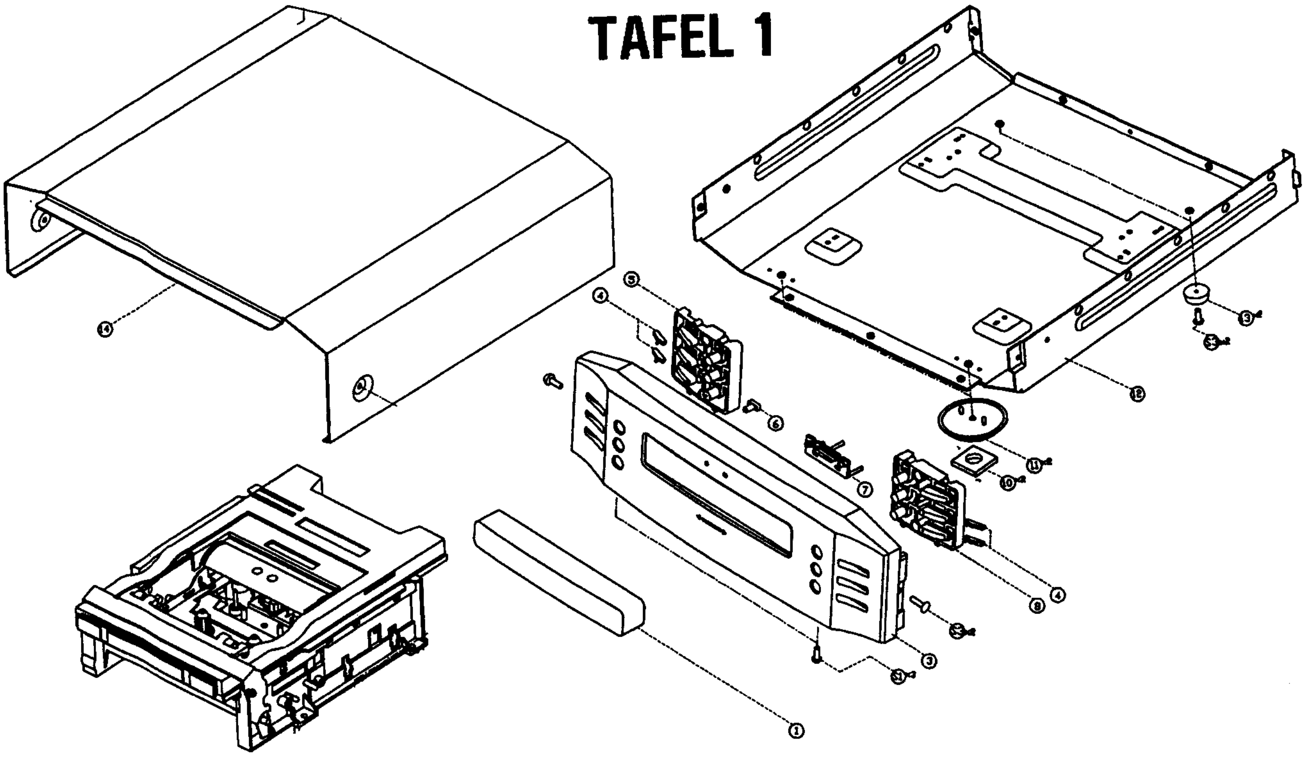

P95 (S19)
P94 (S18)
P93 (S17)
P92 (S16)
P91 (S15)
P90 (S14)
P87 (S13)
P86 (S12)
P85 (S11)
P84 (S10)
P83 (S9)
P82 (S8)
P81 (S7)
P80 (S6)
P77 (S5/G0)
P76 (S4/G1)
P75 (S3/G2)
P74 (S2/G3)
P73 (S1/G4)
P72 (S0/G5)
P71 (G6)
P70 (G7)
P57 (G8)
P56 (G9)
P55 (G10)
P54 (G11)
P53 (G12)
P52 (G13)
P51 (G14)
P50 (G15)
(S20) P96
(S21) P97
(S22) PD0
(S23) PD1
(S24) PD2
(S25) PD3
(S26) PD4
(S27) PD5
(S28) PD6
(S29) PD7
(S30) PE0
(S31) PE1
(S32) PE2
(S33) PE3
(S34) PE4
(S35) PE5
(S36) PE6
(S37) PE7
(S38) PF0
(S39) PF1
VKK
P07
P06
P05
P04
P03
P02
P01
P00
P17
P16
P15 (TC2)
P14 (PPG)
P13 (DVO)
P12 (INT2/TC1)
P11 (INT1)
P10 (INT0)
RESET
XOUT
XIN
VDD
(KEY0) P40
(KEY1) P41
(KEY2) P42
(KEY3) P43
(PWM/PDO/KEY4) P44
(SCK2/KEY5) P45
(SI2/KEY6) P46
(SO2/KEY7) P47
(SCK1) P30
(SI1) P31
(SO1) P32
(INT3/TC3) P33
(AIN0) P60
(AIN1) P61
(AIN2) P62
(AIN3) P63
(AIN4) P64
(AIN5) P65
(AIN6) P66
(AIN7) P67
VSS
VASS
VAREF
VDD
P20
TEST
(XTIN) P21
(XTOUT) P22
VSS

BLOCK DIAGRAM


I/O Ports
Output Ports
I/O Ports
P97 - P90
P87 - P80
P77 - P70
P57 - P50
P1D7 - P1D0
P1E7 - P1E0
P1F1 - P1F0
P9
P8
P7
P5
P1D
P1E
P1F
Power Supply
VDD
VSS
VFT Power Supply
VKK
Key scan control
ALU
P W S
Flags
RBS
Stack Pointer
Data Memory (RAM)
Register Banks
Program Counter
Program Memory (ROM)
Reset I/O RESET
Test pin TEST
System Controller
Standby Controller
Timing Generator
Interrupt Controller
Resonator Connecting Pins
XIN
XOUT
High Frequ
Low Frequ
Clock Generator
Time Base Time
Watchdog Timer
16-bit Timer /Counters
TC1
TC2
8-bit Timer /Counters
TC3
TC4
Serial Interfaces
SIO1
SIO2
Inst. register
Inst. Decoder
P2
8-bit A/D Converter
P6
P0
P1
P3
P4
P22 - P20
VAREF
VASS
P67 - P60
(AIN7) - (AIN0)
P07 - P00
P17 - P10
P33 - P30
P47 - P40
I/O Ports

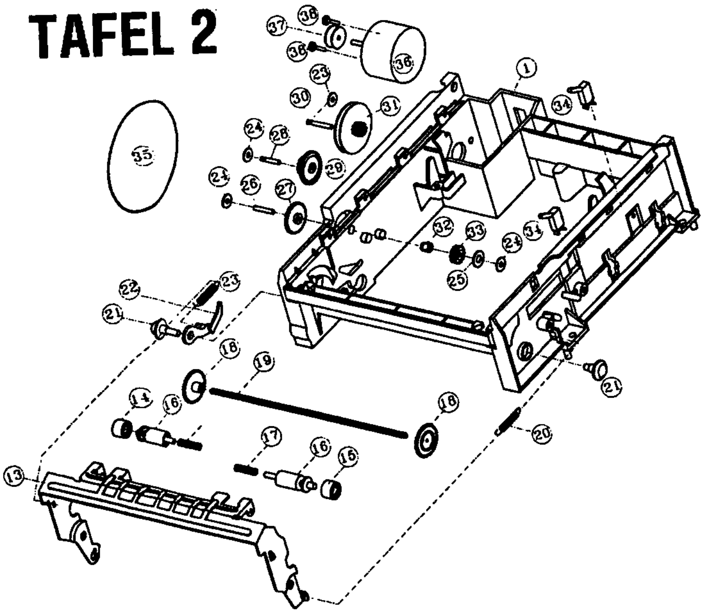
EXPLOSION TAPE-DECK

TAFEL 1

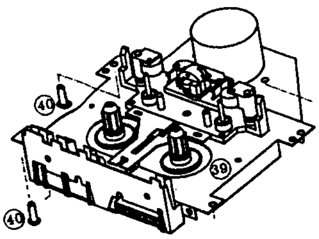


14
5
4
6
7
8
4
3
1
12
11
10

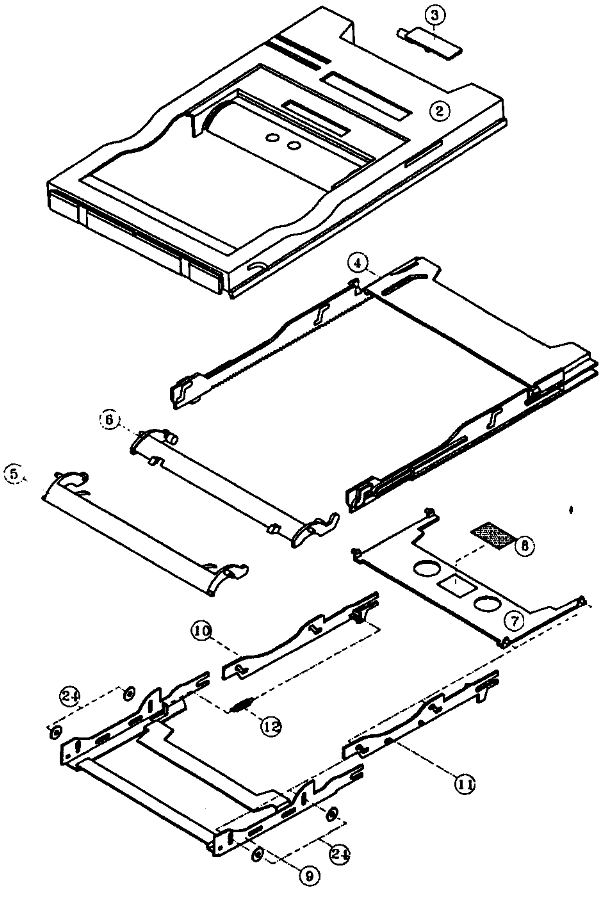
TAFEL 2



37
38
38
36
23
30
31
35
24
28
29
24
26
27
1
34
32
33
34
24
25
22
23
21
18
19
14
16
18
20
21
17
16
15
13

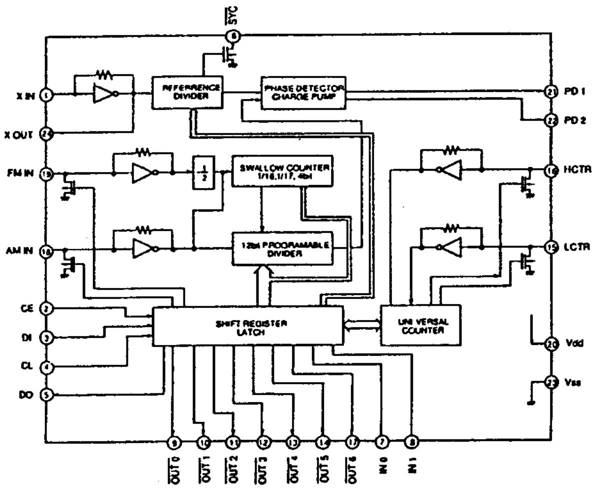


TAFEL 3

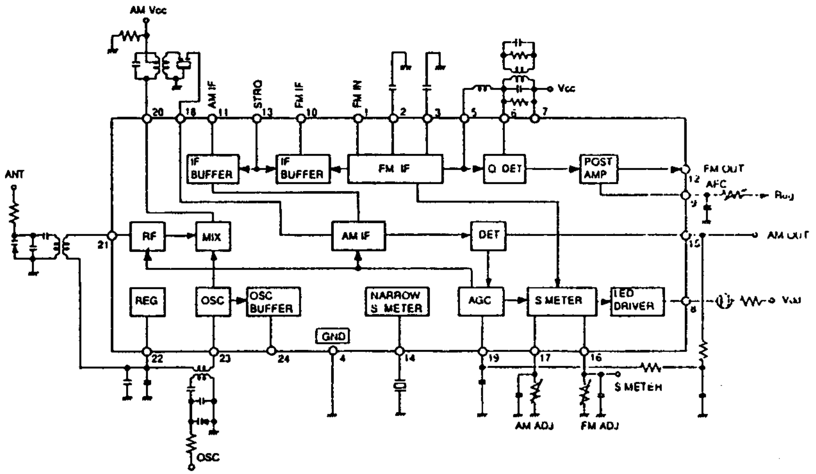


3
2
4
6
5
8
7
10
24
12
11
24
9

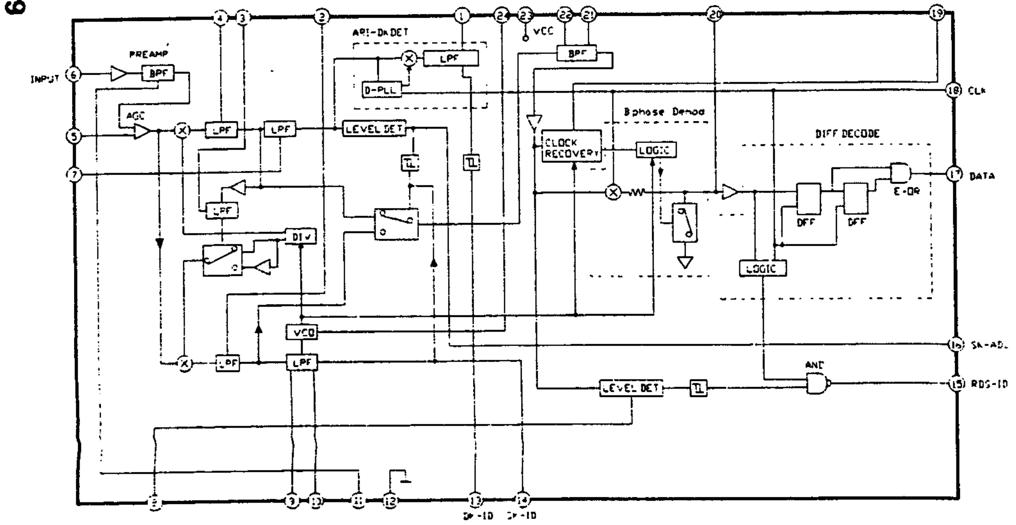
• LC7218 (PLL SYNTHESIZER)


SYC
X IN
X OUT
FM IN
AM IN
CE
DI
CL
DO
REFERENCE DIVIDER
PHASE DETECTOR CHARGE PUMP
SWALLOW COUNTER 1/16,1/17, 4bit
12bit PROGRAMMABLE DIVIDER
SHIFT REGISTER LATCH
UNI VERSAL COUNTER
PD 1
PD 2
HCTR
LCTR
Vdd
Vss
OUT 0
OUT 1
OUT 2
OUT 3
OUT 4
OUT 5
OUT 6
IN 0
IN 1

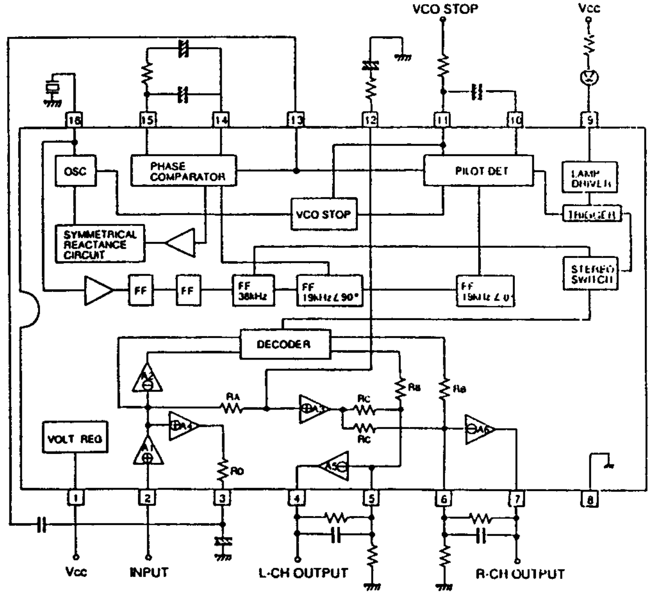
• LA1266 (AM/FM IF AMP)


AM Vcc
AM IF
STRO
FM IF
FM IN
Vcc
ANT
IF BUFFER
IF BUFFER
FM IF
Q DET
POST AMP
FM OUT
AFC
RF
MIX
AM IF
DET
AM OUT
REG
OSC
OSC BUFFER
NARROW S METER
AGC
S METER
LED DRIVER
GND
S METER
AM ADJ
FM ADJ
OSC

LA2232


PREAMP
INPUT
AGC
BPF
LPF
LPF
LEVEL DET
ARI-DK DET
D-PLL
LPF
VCC
BPF
CLOCK RECOVERY
LOGIC
Bphase Demod
DIFF DECODE
DFF
DFF
E-OR
LOGIC
DIV
VCO
LPF
LPF
LEVEL DET
AND
CLK
DATA
SK-ADJ
RDS-ID
SK-ID
DK-ID

• LA3410A (PLL FM MPX DEMODULATOR)


VCO STOP
Vcc
OSC
PHASE COMPARATOR
VCO STOP
PILOT DET
LAMP DRIVER
TRIGGER
SYMMETRICAL REACTANCE CIRCUIT
FF
FF
FF 38kHz
FF 19kHz∠90°
FF 19kHz∠0°
STEREO SWITCH
DECODER
VOLT REG
RA
RA
RB
RB
RC
RC
RO
Vcc
INPUT
L-CH OUTPUT
R-CH OUTPUT

MEASUREMENT AND ADJUSTMENT METHODS

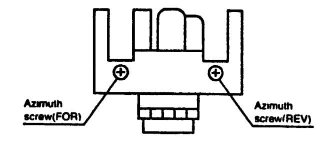
Measurement condition
- Dolby NR position: OFF
- Make sure heads are clean
- Make sure capstan and pressure roller are clean.

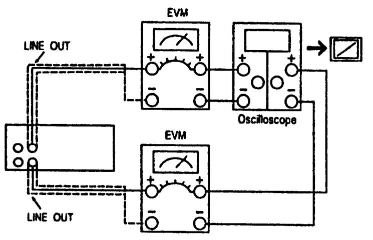
MEASURING INSTRUMENTS
- EVM(Electronic Voltmeter)
- Oscilloscope
- Frequency counter
- AF Oscillator
- DC Voltmeter
- ATT(Attenuator)
- Resistor (600Ω)

Test tape
- Head azimuth (10KHz, -10dB): MTT-114N
- Tape speed(3KHz, -10dB): MTT-111N
- Playback frequency response (125Hz, 1KHz, 10KHz, -10dB)
- Playback gain: MTT-150
- Blank tape
  Normal blank tape: MTT-5511
  CrO₂ blank tape: MTT-5561
  Metal blank tape: MTT-5571

HEAD AZIMUTH ADJUSTMENT

1. Test equipment connections are shown in fig. 1.
2. Playback the head Azimuth test tape and requlate the angle adjust screw so that the outputs of L-ch and R-ch are maximized. (When the adjusting positions are different with L-ch and R-ch, find a position where the outputs of L-ch and R-ch are balanced and then make the adjustment.)
3. At the same time, obtain a lissajous waveform and eliminate phase deflection.
4. After the adjustment, apply screw lock to the angle adjusting value.


Azimuth screw(FOR)
Azimuth screw(REV)

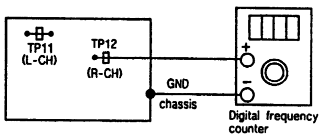

EVM
LINE OUT
Oscilloscope
EVM
LINE OUT

(FIG. 1)

TAPE SPEED ADJUSTMENT

1. Test equipment connections are shown in fig. 2.
2. Playback the middle part of the test tape.

Adjustment point	VR41
Standard Value	3,000Hz ±30Hz

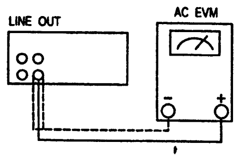

TP11 (L-CH)
TP12 (R-CH)
GND
chassis
Digital frequency counter

(FIG. 2)

PLAYBACK GAIN ADJUSTMENT

1. Test equipment connections are shown in fig. 3.
2. Playback the playback gain test tape. (MTT-150).
3. Adjust playback gain.

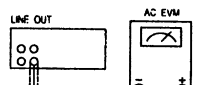
Adjustment Point	L ch : VR11	R ch : VR12
Standard Value	548mV	


LINE OUT
AC EVM

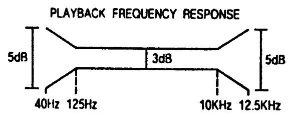
(FIG. 3)

PLAYBACK FREQUENCY RESPONSE

1. Testequipment connections are shown in fig. 4.
2. Playback the playback frequency response test tape.
3. Check that the frequency response is within the range shown in Fig. 5 for both L-ch and R-ch.


LINE OUT
AC EVM

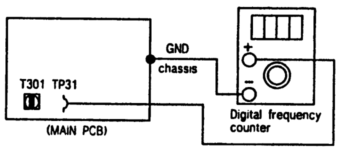
(FIG. 4)



(FIG. 5)

BIAS FREQUENCY ADJUSTMENT

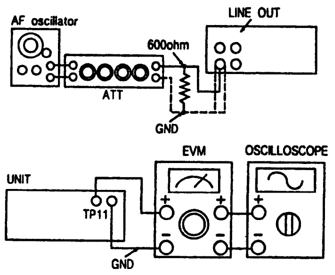
1. Test equipment connections are shown in fig. 6.
2. Load a CrO₂ blank test tape.
3. Press the record and pause button.
4. Adjust T301 for 105KHz frequency counter reading.


GND
chassis
T301
TP31
(MAIN PCB)
Digital frequency counter

(FIG. 6)

OVERALL GAIN ADJUSTMENT

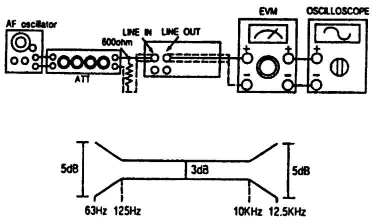
1. Test equipment connections are shown in fig. 7.
2. Insert the normal reference blank tape.
3. Place UNIT into recorde mode.
4. Supply a 1KHz signal through ATT (-10dB) from AF oscillator to line in.
5. Adjust ATT until monitor level at TP11 (L-ch) or TP12 (R-ch) becomes 180mV.
6. Playback recorded tape and make sure that the output level at TP11 (L-ch) or TP12 (R-ch) becomes 180mV.
7. If measured value is not 180mV, adjust it by using VR21 (L-CH) or VR22 (R-CH).
8. Repeat from step (2).


AF oscillator
LINE OUT
600ohm
ATT
GND
EVM
OSCILLOSCOPE
UNIT
TP11
GND

(FIG. 7)

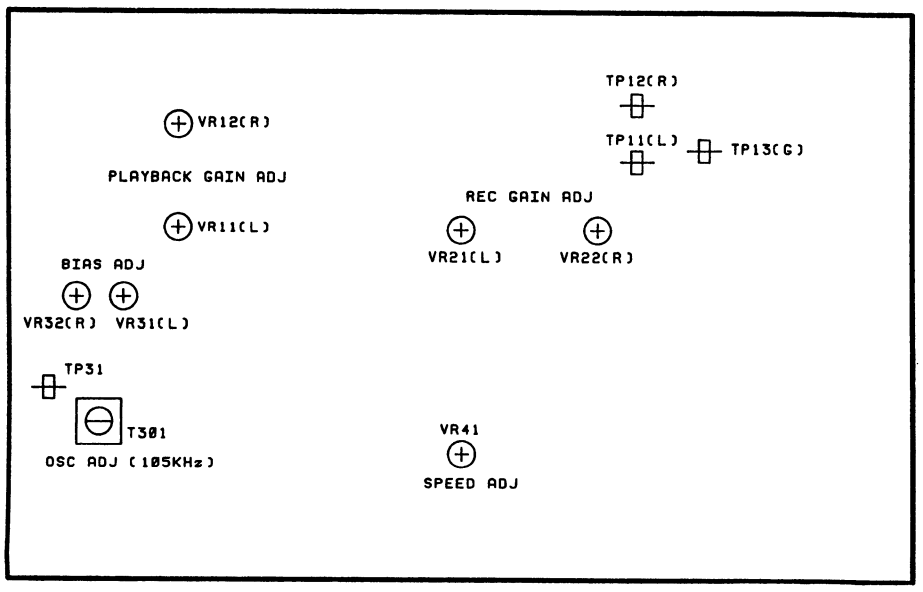
OVERALL FREQUENCY RESPONSE

1. Set a normal blank tape (MTT-5511) and record by apply signal (100Hz, 1KHz, 10KHz) through ATT-from AF oscillator to line in (Line out Level: 33mV).
2. Playback the signal recorded in step 1, and check that the level of each output frequency in within the range shown in fig. 8 in comparison with the reference frequency (1KHz).
3. If it is not within the standard range adjust the bias current by using VR31 (L-CH) or VR32 (R-CH) so that the frequency level is within the standard.
- Level up in high frequency range...Increase the bias current.
- Level down in high frequency range...Decrease the bias current.
4. After that. increase the signal recorded on CrO₂ blank tape (MTT-5561) and metal blank tape (MTT-5571) up to 14KHz and adjust in the same way as mentioned above and check that the frequency level is within the range shown in Fig. 8.

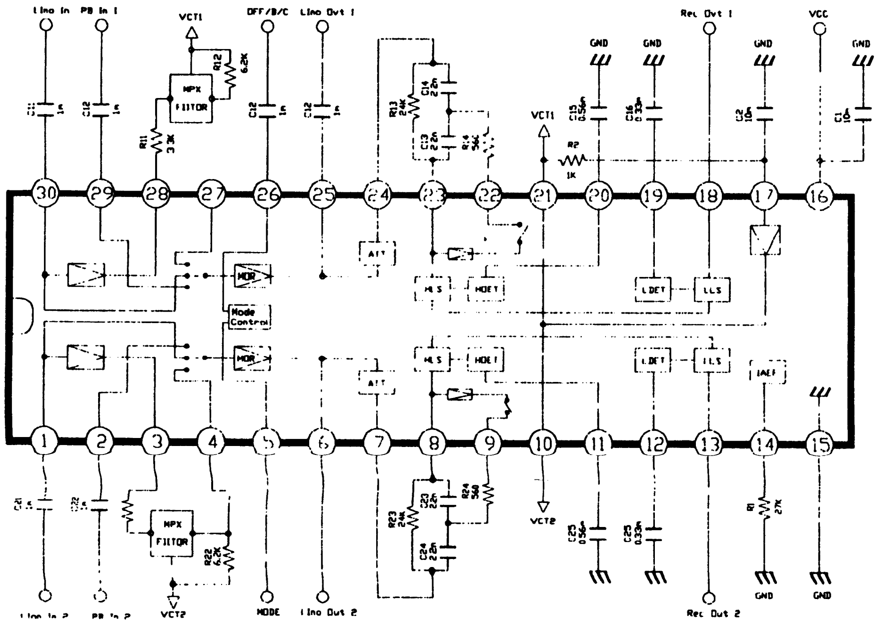

AF oscillator
LINE IN
LINE OUT
600ohm
ATT
EVM
OSCILLOSCOPE
5dB
3dB
5dB
63Hz
125Hz
10KHz
12.5KHz

(FIG. 8)

DECK ADJUSTMENT POINT


TP12(R)
VR12(R)
TP11(L)
TP13(G)
PLAYBACK GAIN ADJ
REC GAIN ADJ
VR11(L)
BIAS ADJ
VR21(L)
VR22(R)
VR32(R)
VR31(L)
TP31
T301
OSC ADJ (105KHz)
VR41
SPEED ADJ

CXA1331S (DOLBY B. C Noise Reduction System)

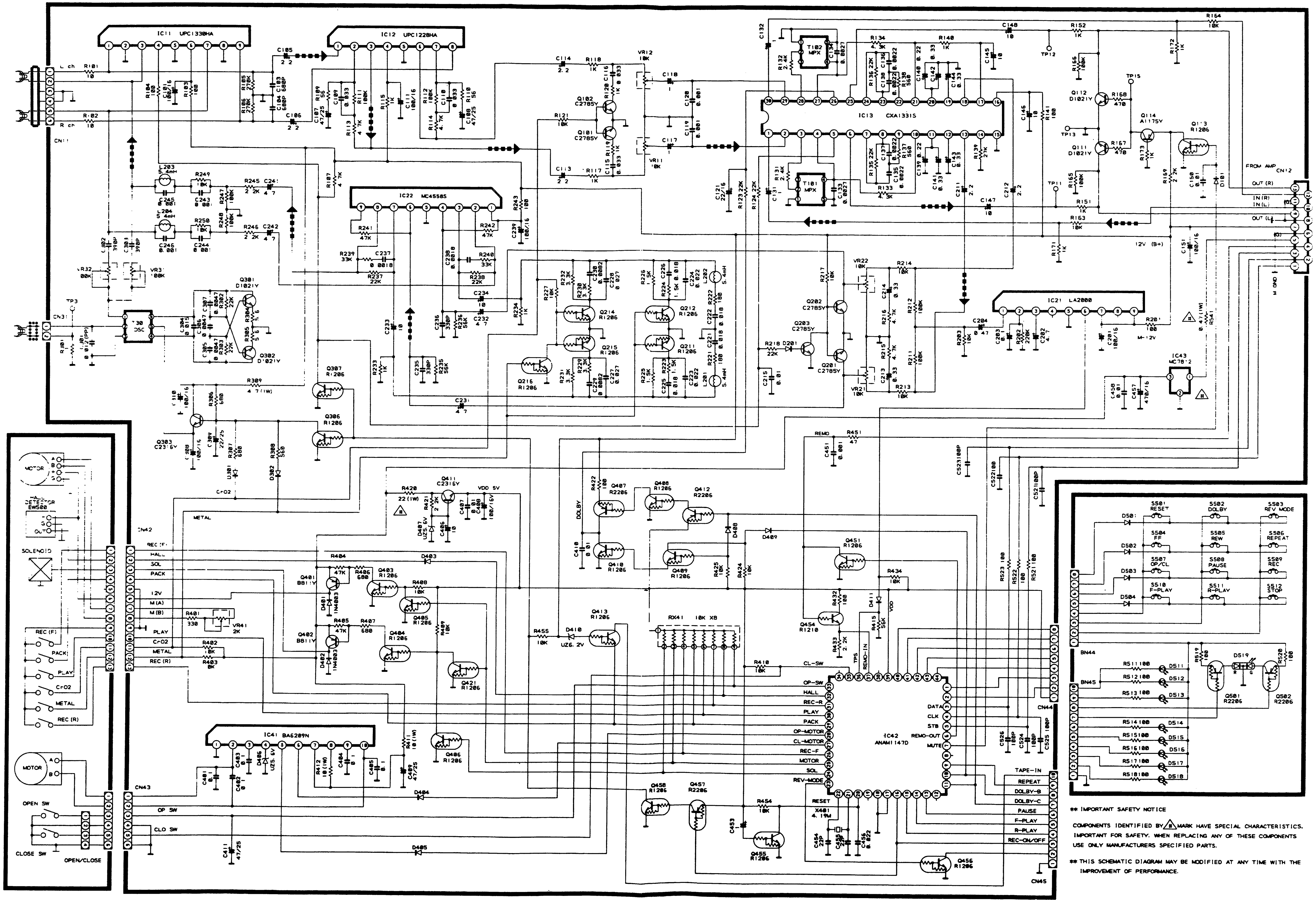

Line In
PB In 1
VCT1
OFF/B/C
Line Out 1
Rec Out 1
VCC
GND
NPX FILTER
Mode Control
ATT
1K
Line In 2
PB In 2
VCT2
MODE
Line Out 2
Rec Out 2
GND

µ-COM IC(ANAM1147D)

PIN No.	SYMBOL	IO	DESCRIPTION
40~43	P20~P23	I	KEY SCAN INPUT
44, 1, 2	P71~P73	O	KEY SCAN OUT
3	DATA	O	SERIAL DATA OUTPUT
4	CLK	O	SERIAL CLK OUTPUT
5	STB	O	SERIAL STROBE OUTPUT
6	REMO-O	O	REMOTE OUTPUT
7	$\overline{\text{MUTE}}$	O	LINE MUTE
9	$\overline{\text{REPEAT}}$	O	REPEAT LED DISPLAY
10	$\overline{\text{DOL-B}}$	O	DOLBY-B OUTPUT
11	$\overline{\text{DOL-C}}$	O	DOLBY-C OUTPUT
13	$\overline{\text{PAUSE}}$	O	PAUSE LED DISPLAY
14	$\overline{\text{F-PLAY}}$	O	FOR-PLAY LED DISPLAY
15	$\overline{\text{R-PLAY}}$	O	REV-PLAY LED DISPLAY
16	$\overline{\text{REC}}$	O	REC ON/OFF OUTPUT
17, 18	VSS	-	GND
20	$\overline{\text{RESET}}$	I	RESET CONTROL PORT
21, 22	X1, 2	-	CRYSTAL IN/OUT PORT
23	MODE	O	REV-MODE LED DISPLAY
24	$\overline{\text{SOL}}$	I	DECK SOLENOID CONTROL
25	$\overline{\text{MOTOR}}$	I	DECK MOTOR CONTROL
26	REC-F	I	DECK FOR-REC SW DETECTOR
27	$\overline{\text{CL-MOT}}$	O	LOADING CLOSE MOTOR CONTROL
28	$\overline{\text{OP-MOT}}$	O	LOADING OPEN MOTOR CONTROL
29	PACK	I	DECK PACK SW DETECTOR
30	PLAY	I	DECK PLAY SW DETECTOR
31	REC-R	I	DECK REV-REC SW DETECTOR
32	HALL	I	DECK HALL IC DATA INPUT
33	OP-SW	I	LOADING OPEN SW DETECTOR
35	CL-SW	I	LOADING CLOSE SW DETECTOR
36	TPS	I	TPS DETECT PORT
37	REMO-IN	I	REMOTE INPUT PORT
39	V_{DD}	-	V_{DD}, +5V

SCHEMATIC DIAGRAM

TAPE-DECK



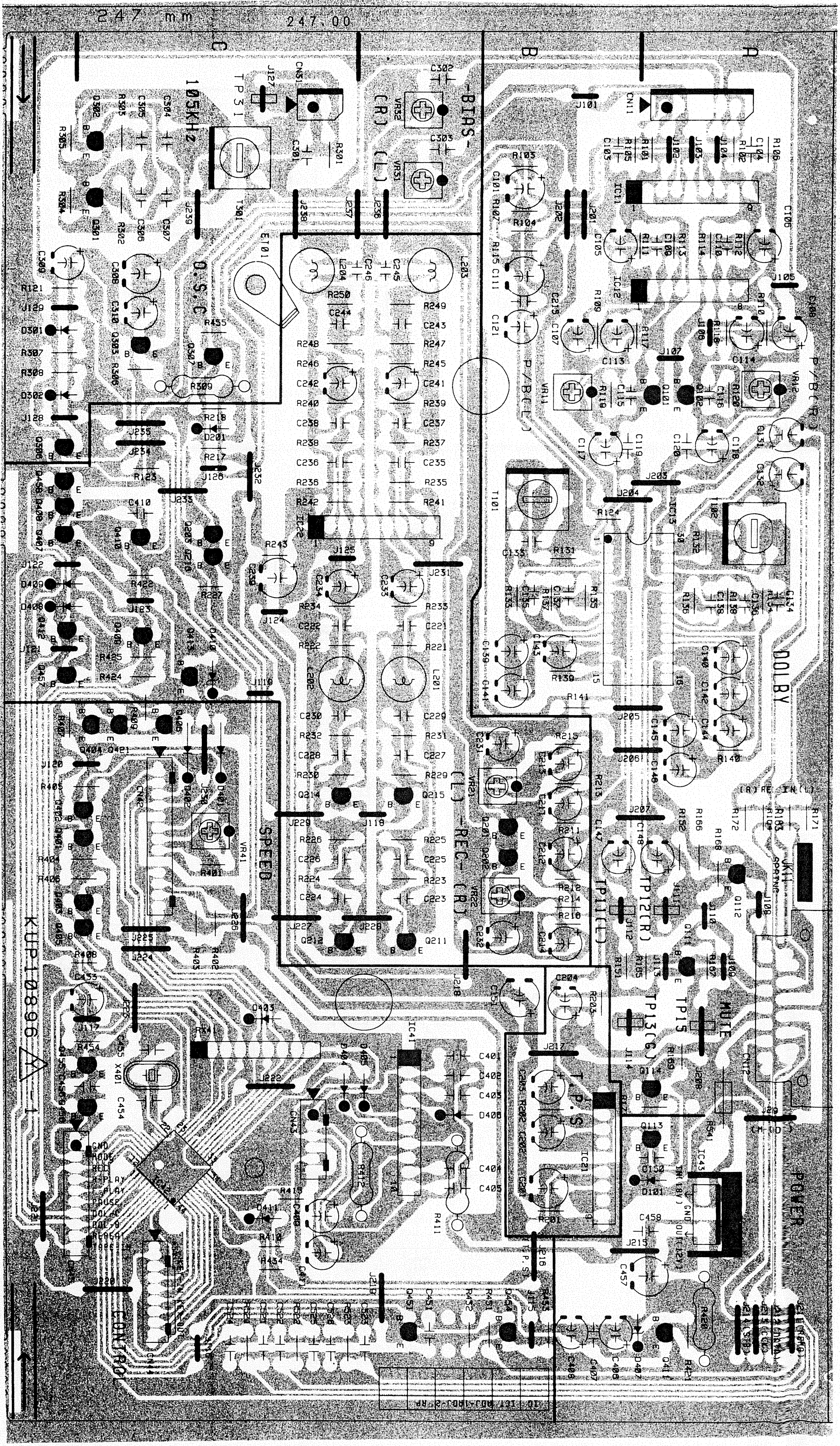
IC11 UPC1330HA
IC12 UPC1228HA
IC13 CXA1331S
IC21 LA2000
IC22 MC4558S
IC41 BA6209N
IC42 ANAM1147D
IC43 MC78?2
T101 MPX
T102 MPX
L ch
R ch
CN11
CN12
CN31
CN42
CN43
CN44
CN45
BN44
BN45
FROM AMP
OUT (R)
IN(R)
IN(L)
OUT (L)
12V (B+)
OSC
MOTOR
SOLENOID
REC (F)
PACK
PLAY
CrO2
METAL
REC (R)
HALL
SOL
12V
M(A)
M(B)
OPEN SW
CLOSE SW
OPEN/CLOSE
OP SW
CLO SW
RX41 10K X8
REMO
DOLBY
VDD 5V
CL-SW
OP-SW
HALL
REC-R
PLAY
PACK
OP-MOTOR
CL-MOTOR
REC-F
MOTOR
SOL
REV-MODE
RESET
X401 4.19M
DATA
CLK
STB
REMO-OUT
MUTE
TAPE-IN
REPEAT
DOLBY-B
DOLBY-C
PAUSE
F-PLAY
R-PLAY
REC-ON/OFF
S501 RESET
S502 DOLBY
S503 REV MODE
S504 FF
S505 REW
S506 REPEAT
S507 OP/CL
S508 PAUSE
S509 REC
S510 F-PLAY
S511 R-PLAY
S512 STOP
D501
D502
D503
D504
D511
D512
D513
D514
D515
D516
D517
D518
D519
Q501 R2206
Q502 R2206
Q101 C2785Y
Q102 C2785Y
Q111 D1021Y
Q112 D1021Y
Q113 R1206
Q114 A1175Y
Q201 C2785Y
Q202 C2785Y
Q203 C2785Y
Q211 R1206
Q212 R1206
Q214 R1206
Q215 R1206
Q216 R1206
Q301 D1021Y
Q302 D1021Y
Q303 C2316Y
Q306 R1206
Q307 R1206
Q401 B811Y
Q402 B811Y
Q403 R1206
Q404 R1206
Q405 R1206
Q406 R1206
Q407 R2206
Q408 R1206
Q409 R1206
Q410 R1206
Q411 C2316Y
Q412 R2206
Q413 R1206
Q421 R1206
Q451 R1206
Q454 R1210
Q455 R1206
Q456 R1206
Q457 R2206
Q458 R1206
VR11 10K
VR12 10K
VR21 10K
VR22 10K
VR31 20K
VR32 20K
VR41 2K
L201 5.4mH
L202 5.4mH
L203 5.4mH
L204 5.4mH
TP3
TP11
TP12
TP13
TP15
D401 1N4003
D402 1N4003
D406 UZ5.6V
D407 UZ5.6V
D410 UZ6.2V

** IMPORTANT SAFETY NOTICE

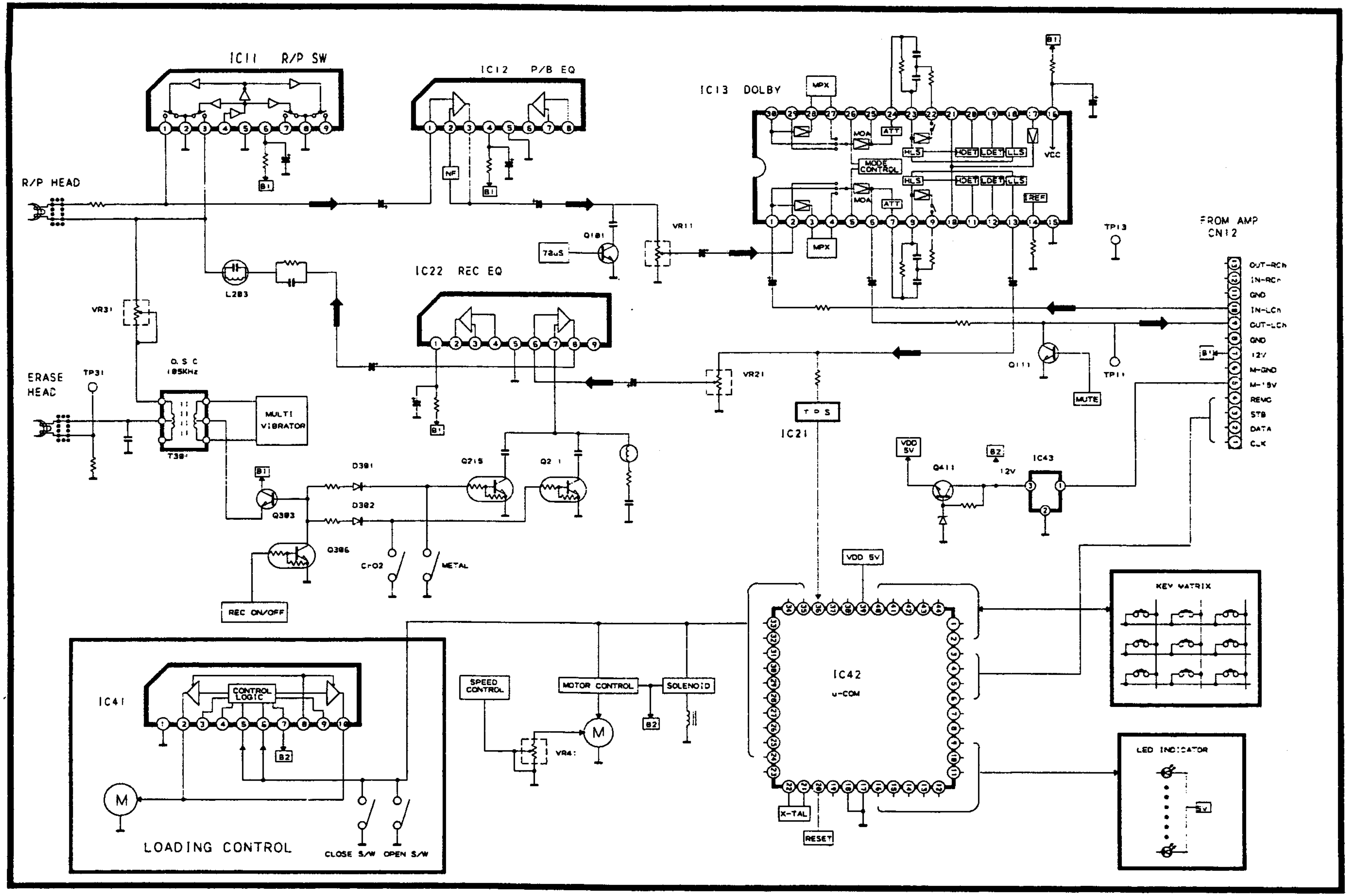
COMPONENTS IDENTIFIED BY ⚠ MARK HAVE SPECIAL CHARACTERISTICS. IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS USE ONLY MANUFACTURERS SPECIFIED PARTS.

** THIS SCHEMATIC DIAGRAM MAY BE MODIFIED AT ANY TIME WITH THE IMPROVEMENT OF PERFORMANCE.

PLATINE TAPE-DECK

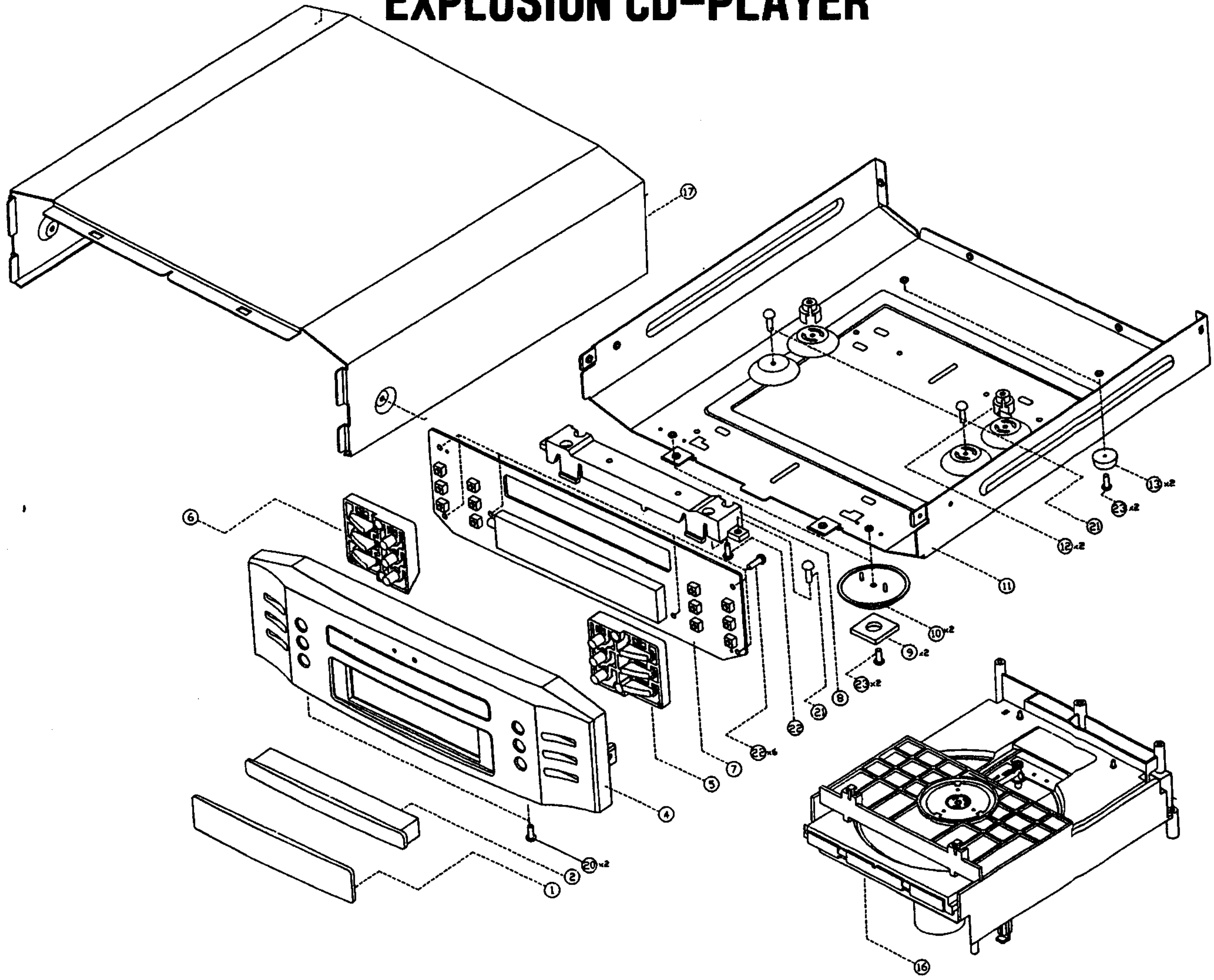

247 mm
247.00
C
B
A
105KHz
TP31
-BIAS-
(R)
(L)
O.S.C
P/B(L)
P/B(R)
DOLBY
SPEED
(L) -REC- (R)
TP11(L)
TP12(R)
TP13(G)
TP15
MUTE
POWER
T.P.S
CONTROL
KUP10896
(R)REF.IN(L)

BLOCK DIAGRAM

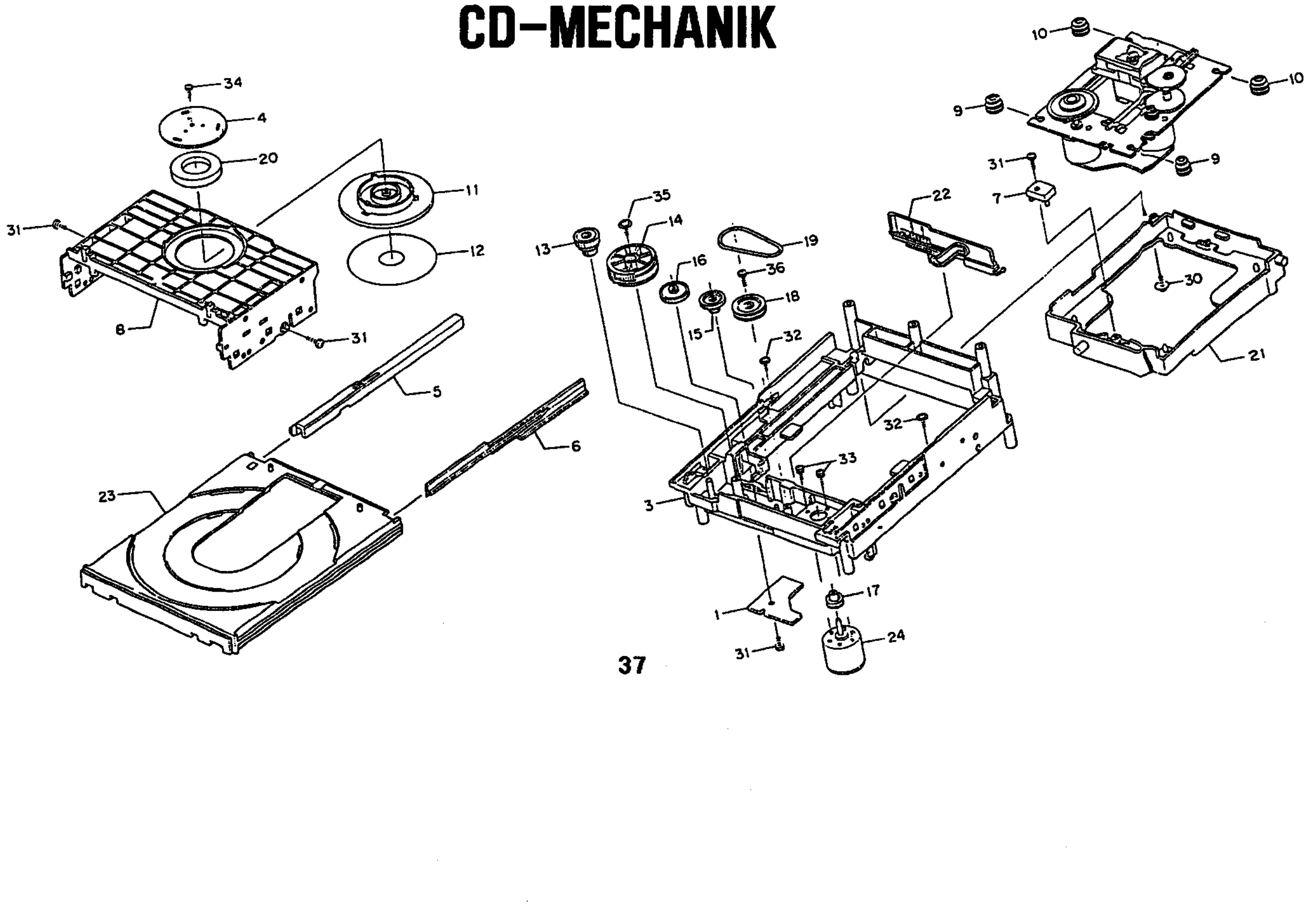

IC11 R/P SW
IC12 P/B EQ
IC13 DOLBY
MPX
MOA
ATT
HLS
HDET
LDET
LLS
MODE CONTROL
IREF
VCC
B1
NF
R/P HEAD
72uS
Q101
VR11
TP13
FROM AMP CN12
OUT-RCh
IN-RCh
GND
IN-LCh
OUT-LCh
GND
12V
M-GND
M-15V
REMC
STB
DATA
CLK
L203
IC22 REC EQ
VR31
ERASE HEAD
TP31
O.S.C 105KHz
MULTI VIBRATOR
T301
Q303
D301
D302
Q215
Q211
Q306
CrO2
METAL
REC ON/OFF
VR21
T P S
IC21
Q111
TP11
MUTE
VDD 5V
Q411
B2
12V
IC43
VDD 5V
IC42
u-COM
X-TAL
RESET
KEY MATRIX
LED INDICATOR
5V
IC41
CONTROL LOGIC
LOADING CONTROL
M
CLOSE S/W
OPEN S/W
SPEED CONTROL
MOTOR CONTROL
SOLENOID
VR41

BLOCKSCHALTBILD TAPE-DECK

EXPLOSION CD-PLAYER


17
6
13×2
21
23×2
12×2
11
10×2
9×2
23×2
8
21
22
22×6
7
5
4
20×2
2
1
16

CD-MECHANIK

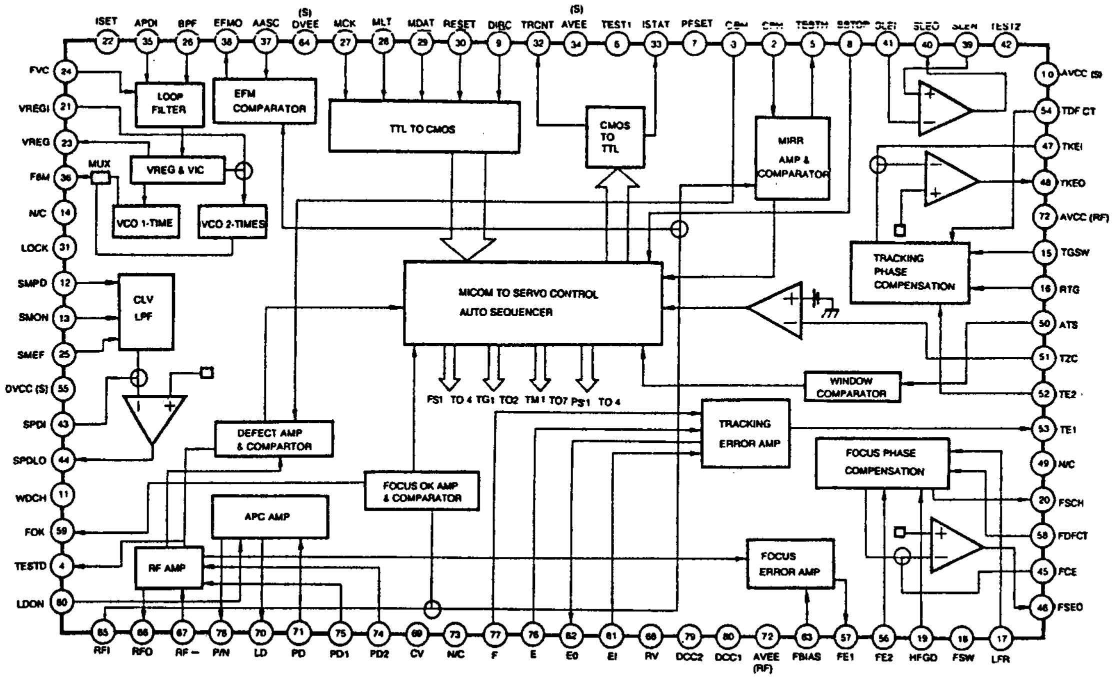

34
4
20
11
12
31
8
31
5
6
23
35
14
13
16
19
36
18
15
32
22
10
10
9
9
31
7
30
21
32
33
3
1
17
31
24

KA9220B (RF + SERVO AMP)

PIN No.	SYSTEM	DESCRIPTION
1	AVEE (R)	Analog negative power supply input pin for RF part
2	CPH	Capacitor connection pin of mirror hold.
3	CBH	Capacitor connection pin of defect bottom-hold
4	TESTD	Defect test pin
5	TESTM	Mirror test pin
6	Test1	Input pin for test
7	PFSET	Peak frequency setting pin for focus, tracking compensation and fc (cut off frequency) of CLV LPF.
8	SSTOP	Check the position pin of pick-up whether inside or not.
9	DIRC	Direct 1 Track jump Control Pin
10	AVCC (S)	Analog positive power supply input pin for SERVO part.
11	WDCH	Auto-sequencer clock-input pin (Normal speed)=88.2KHz, Double speed=176.4KHz)
12	SMPD	Connection pin of DSP SMPD
13	SMON	Connection pin of DSP SMON, spindle servo ON at "H"
14	N/C	No connection pin
15	TGSW	Providing time constant to change the high frequency tracking gain
16	RTG	Capacitor connection pin to switch the tracking gain of high frequency
17	LFR	Capacitor connection pin to perform rising low bandwidth of focus servo loop
18	FSW	High frequency gain of focus servo loop can be changed by FS3 switch ON or OFF
19	HFGD	Reducing high frequency gain with capacitor connected between pin 18 and pin 19.
20	FSCH	Time constant external pin to generate focus search waveform
21	VREGI	External regulator voltage input pin for VCO
22	ISET	Determing the peak value of focus search, track jump and SLED kick
23	VREG	3.5V Regulator output pin
24	FVC	Pin connected external resistor to adjust free running frequency of VCO
25	SMEF	Providing an external LPF time constant of CLV SERVO Loop
26	BPE	Providing time constant for Loop filter of VCO
27	MCK	Clock input pin from micom
28	MLT	Latch input pin from micom
29	MDAT	Data input pin from micom
30	RESET	Reset input pin from micom, reset at "L"
31	LOCK	Pin for operation of the sled runaway prevention function at "L"
32	TRCNT	Track count output pin
33	ISTAT	Internal status output pin
34	AVEE (S)	Analog negative power supply input pin for SERVO part
35	APDI	Input pin of DSP phase comparison output (PHAS)
36	F8M	Output pin of analog VCO Normal speed=8.64 MHz, Double speed=17.28MHz
37	AASC	Auto-Asymmetry control input pin
38	EFMO	EFM comparator output pin
39	SLEN	Non-inverting input pin of SLED SERVO amplifier
40	SLEO	Output pin of SLED SERVO amplifier
41	SLEI	Inverting input pin of SLED SERVO amplifier
42	TEST2	Test input pin to change speed mode Normal speed="H", Double speed="L"
43	SPDI	Inverting input pin of spindle servo amplifier
44	SPDLO	Spindle servo amplifier output pin
45	FCE	Inverting input pin of focus servo amplifier
46	FSEO	Output pin of focus servo amplifier
47	TKEI	Non-inverting input pin of tracking servo amplifier
48	TKEO	Output pin of tracking servo amplifier
49	N/C	No connection
50	ATS	Anti-shock input pin
51	TZC	Tracking Zero Crossing input pin
52	TE2	Tracking Error Servo input pin
53	TE1	Output pin of tracking Error Amplifier
54	TDFCT	Capacitor Connection pin for Defect Compensation of tracking servo
55	DVCC (S)	Digital positive power supply input pin for servo part
56	FE2	Focus error servo input pin
57	FE1	Output pin of focus error Amplifier
58	FDFCT	Capacitor connection pin for defect compensation of focus servo
59	FOK	Output pin of Focus ok comparator
60	LDON	Laser diode ON/OFF control pin
61	EI	Feedback input pin of E I-V amplifier
62	EO	Output pin of E I-V Amplifier
63	FBIAS	Bias pin of non-inverting input of focus error amplifier
64	DVEE (S)	Digital negative power supply input for servo part
65	RFI	Output Signal of RF summing amplifier is inputed through capacitor
66	RFO	Output pin of RF summing amplifier
67	RF-	Inverting input pin of RF summing amplifier
68	RV	Output pin of (AVCC + AVEE)/2 Voltage
69	CV	Bias input pin of Center Voltage buffer
70	LD	Output pin of APC amplifier
71	PD	Input pin of APC amplifier
72	AVCC (R)	Analog positive power supply input pin for RF part
73	N/C	No connection
74	PD2	Inverting input pin of RF I-V AMP2
75	PD1	Inverting input pin of RF I-V AMP1
76	F	Inverting input pin of F I-V AMP
77	E	Inverting input pin of E I-V AMP
78	P/N	Selecting P-sub/N-sub of Laser diode
79	DCC2	Defect bottom-hold output is inputed through capacitor
80	DCC1	Output pin of defect bottom-hold

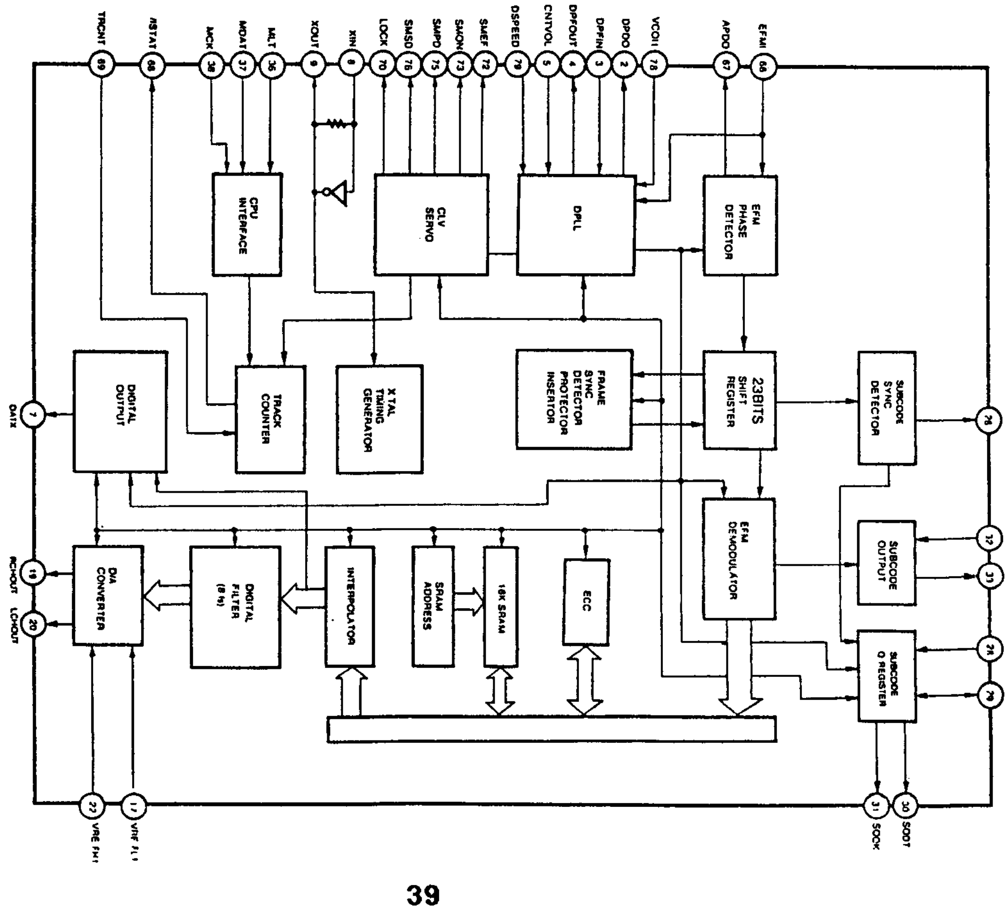
BLOCK DIAGRAM

KA9220B


ISET 22
APDI 35
BPF 26
EFMO 38
AASC 37
(S) DVEE 64
MCK 27
MLT 28
MDAT 29
RESET 30
DIRC 9
TRCNT 32
(S) AVEE 34
TEST1 6
ISTAT 33
PFSET 7
CBM 3
CPM 2
TESTM 5
SSTOP 8
SLEI 41
SLEO 40
SLEN 39
TEST2 42
FVC 24
VREGI 21
VREG 23
FSM 36
N/C 14
LOCK 31
SMPD 12
SMON 13
SMEF 25
DVCC (S) 55
SPDI 43
SPDLO 44
WDCH 11
FOK 59
TESTD 4
LDON 80
AVCC (S) 10
TDF CT 54
TKEI 47
TKEO 48
AVCC (RF) 72
TGSW 15
RTG 16
ATS 50
TZC 51
TE2 52
TE1 53
N/C 49
FSCH 20
FDFCT 58
FCE 45
FSEO 46
RFI 65
RFO 66
RF− 67
P/N 78
LD 70
PD 71
PD1 75
PD2 74
CV 69
N/C 73
F 77
E 76
E0 62
EI 61
RV 68
DCC2 79
DCC1 60
AVEE (RF) 72
FBIAS 63
FE1 57
FE2 56
HFGD 19
FSW 18
LFR 17
LOOP FILTER
EFM COMPARATOR
TTL TO CMOS
CMOS TO TTL
MIRR AMP & COMPARATOR
MUX
VREG & VIC
VCO 1-TIME
VCO 2-TIMES
MICOM TO SERVO CONTROL AUTO SEQUENCER
TRACKING PHASE COMPENSATION
CLV LPF
FS1 TO 4 TG1 TG2 TM1 TO7 PS1 TO 4
WINDOW COMPARATOR
DEFECT AMP & COMPARTOR
TRACKING ERROR AMP
FOCUS PHASE COMPENSATION
FOCUS OK AMP & COMPARATOR
APC AMP
RF AMP
FOCUS ERROR AMP

BLOCK DIAGRAM

KS9282B

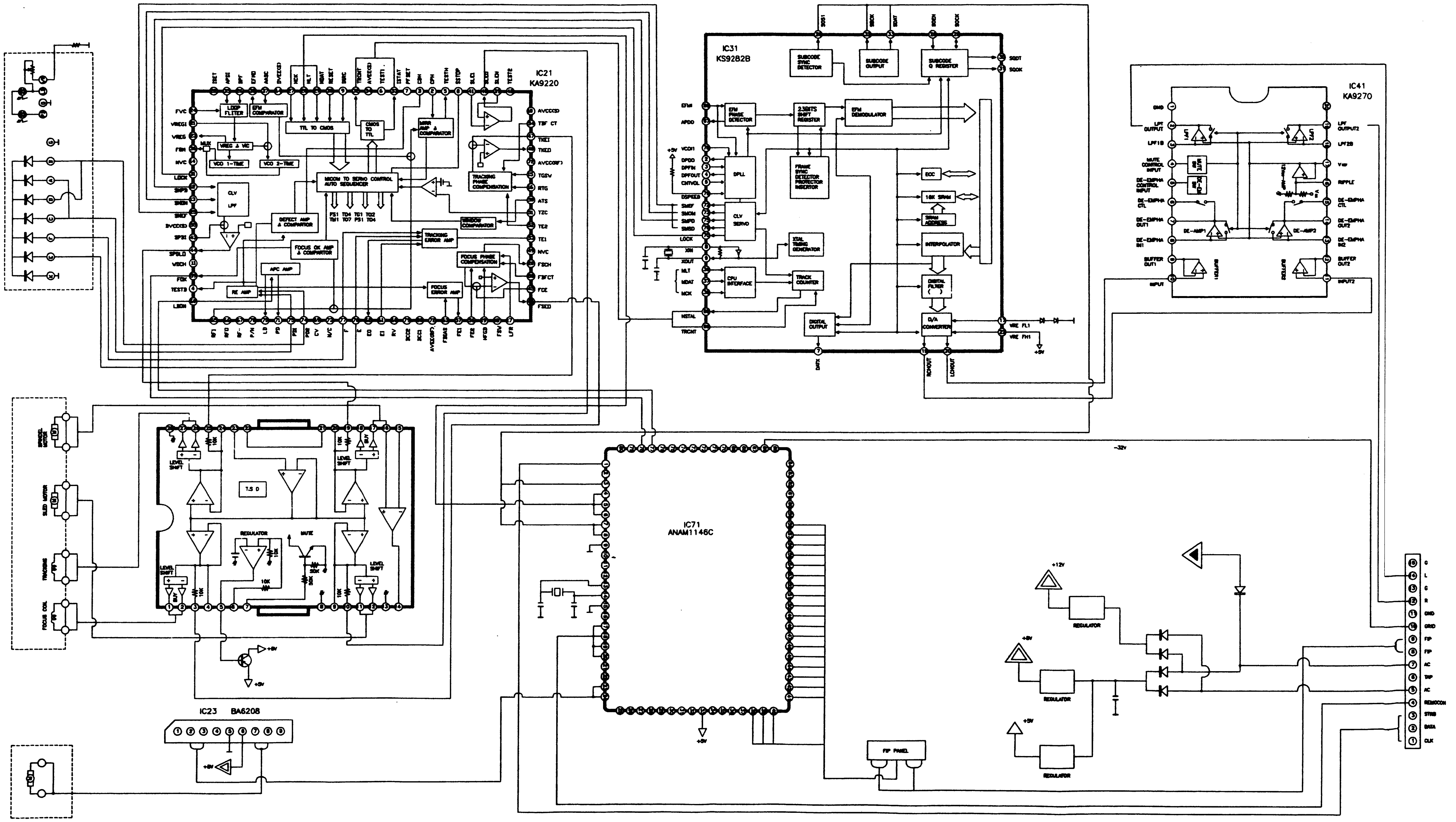

TRCNT 69
ISTAT 68
MCK 38
MDAT 37
MLT 36
XOUT 9
XIN 8
LOCK 70
SMSD 76
SMPD 75
SMON 73
SMEF 72
DSPEED 79
CNTVOL 5
DPFOUT 4
DPFIN 3
DPDO 2
VCOI 78
APDO 67
EFMI 66
SQS1 74
SBCK 32
SDAT 33
SQDN 28
SQCK 29
SQCK 31
SQDT 30
DATX 7
RCHOUT 19
LCHOUT 20
VREFH 22
VREFL 17
CPU INTERFACE
CLV SERVO
DPLL
EFM PHASE DETECTOR
TRACK COUNTER
X TAL TIMING GENERATOR
FRAME SYNC DETECTOR PROTECTOR INSERTOR
23BITS SHIFT REGISTER
SUBCODE SYNC DETECTOR
DIGITAL OUTPUT
D/A CONVERTER
DIGITAL FILTER (8 fs)
INTERPOLATOR
SRAM ADDRESS
16K SRAM
ECC
EFM DEMODULATOR
SUBCODE OUTPUT
SUBCODE Q REGISTER

KS9282B (DSP + DAC)

PIN No.	SYMBOL	I/O	DESCRIPTION
1	AVDD1		Anlog Vcc1
2	DPDO	O	Charge pump output for master PLL
3	DPFIN	I	Filter input for master PLL
4	DPFOUT	O	Filter output for master PLL
5	CNTVOL	I	VCO control voltage for master PLL
6	AVSS1		Analog Ground 1
7	DATX	O	Digital audio output
8	XIN	I	X-tal oscillator input
9	XOUT	O	X-tal oscillator output
10	WDCH	O	Word clock of 48 bit/SLOT (Normal speed=88.2KHz, Double speed=176.4KHz)
11	LRCH	O	Channel clock of 48 bit/SLOT (Normal speed=44.1KHz, Double speed=88.2KHz)
12	ADATA	O	Serial audio data output of 48 bit/SLOT (MSB first)
13	DVSS1		Digital Ground 1
14	BCK	O	Audio data Bit clock for 48 bit/SLOT (Normal speed=2.1168KHz, Double speed=4.2336KHz)
15	C2PO	O	C2 pointer for output audio data
16	VREFL2	I	Input terminal 2 of reference voltage "L" (Floating)
17	VREFL1	I	Input terminal 1 of reference voltage "L" (GND Connection)
18	AVDD2		Analog VCC2
19	RCHOUT	O	Right-Channel audio output through D/A Converter
20	LCHOUT	O	Left-Channel audio output through D/A converter
21	AVSS2		Analog Ground 2
22	VREFH1	I	Input terminal 1 of reference voltage "H" (VDD connection)
23	VREFH2	I	Input terminal 2 of reference voltage "H" (Floating)
24	EMPH	O	Emphasis/Non-Emphasis Output ("H": Emphasis)
25	LKFS	O	The Lock Status output of frame sync
26	SOS1	O	Output of subcode sync signal (S0 + S1)
27	RESET	I	System reset at "L"
28	SQEN	I	SQCK I/O Control ("L": internal CK, "H": external CK)
29	SQCK	I/O	Clock for output Subcode-Q data
30	SQDT	O	Serial output of Subcode-Q data
31	SQOK	O	The CRC check result signal output of subcode-Q
32	SBCK	I	CLOCK for output subcode-Q data
33	SDAT	O	Subcode serial data output
34	DVDD1		Digital Vcc1
35	MUTE	I	Mute control Input ("H": Mute ON)
36	MLT	I	Latch Signal Input from Micom
37	MDAT	I	Serial data Input from Micom
38	MCK	I	Serial Clock input from Micom
39	DB8	I/O	SRAM data I/O Port 8 (MSB)
40	DB7	I/O	SRAM data I/O Port 7
41	DB6	I/O	SRAM data I/O Port 6
42	DB5	I/O	SRAM data I/O Port 5
43	DB4	I/O	SRAM data I/O Port 4
44	DB3	I/O	SRAM data I/O Port 3
45	DB2	I/O	SRAM data I/O Port 2
46	DB1	I/O	SRAM data I/O Port 1 (LSB)
47	C1F1	I/O	Monitoring output for C1 error correction (RA1)
48	C1F2	I/O	Monitoring output for C1 error correction (RA2)
49	C2F1	I/O	Monitoring output for C2 error correction (RA3)
50	C2F2	I/O	Monitoring output for C2 error correction (RA4)
51	C2FL	I/O	C2 decoder flag (High: When the processing C2 code is impossible correction state) RA5)
52	/PBCK	I/O	Output of VCO/2 (Normal speed=4.3218MHz, Double speed =8.6436MHz) (RA6)
53	DV_{SS2}		Digital Ground 2
54	FSDW	I/O	Unprotected frame sync (RA7)
55	ULKFS	I/O	Frame sync protection state (RA8)
56	/JIT	I/O	Display of either RAM overflow or underflow for ±4 frame Jitter margin (RA9)
57	C4M	I/O	Only monitoring signal (Normal playback: 4.2336MHz) (RA10)
58	C16M	I/O	16.9344MHz signal output (RA11)
59	/WE	I/O	Terminal for test
60	/CS	I/O	Terminal for test
61	SEL1	I	Mode Selection Terminal 1 (H:33.8688MHz, L:16.9344MHz)
62	SEL2	I	Mode Selection Terminal 2 (H:APLL L:DPLL)
63	SEL3	I	Mode Selection Terminal 3 (H: CD ROM L:CDP)
64	SEL4	I	Mode Selection Terminal 4 (L: Internal SRAM)
65	TEST	I	Test Terminal (L=Normal operating state)
66	EFMI	I	EFM Signal input
67	APDO	O	Charge Pump output for analog PLL
68	/ISTAT	O	The internal status output
69	TRCNT	I	Tracking counter input signal
70	LOCK	O	Output signal of LKFS Condition sampled PBFR/16 (If LKFS is "H", Lock is "H" If the LKFS is sampled "L" at least 8 times by PBFR/16, Lock is "L")
71	PBFR	O	Write frame clock (Lock: 7.35KHz)
72	SMEF	O	LPF time constant control of the spindle servo error signal
73	SMON	O	ON/OFF control signal for spindle servo
74	DV_{DD2}		Digital Vcc 2
75	SMPD	O	Spindle Motor drive (Rough control in the CLV-S mode Phase control in the CLV-P mode)
76	SMSD	O	Spindle Motor drive (Velocity control in the CLV-P mode)
77	VC_{OO1}	O	Vco output signal (When the state is lock by means of PBFR, it is 8.643MHz)
78	VC_{OI1}	I	VCO input signal
79	DSPEED	I	Double speed mode control (H:Normal Speed, L:Double Speed)
80	APD02	O	Analog PLL Charge Pump output for Double Speed mode

BLOCK DIAGRAM

CD-PLAYER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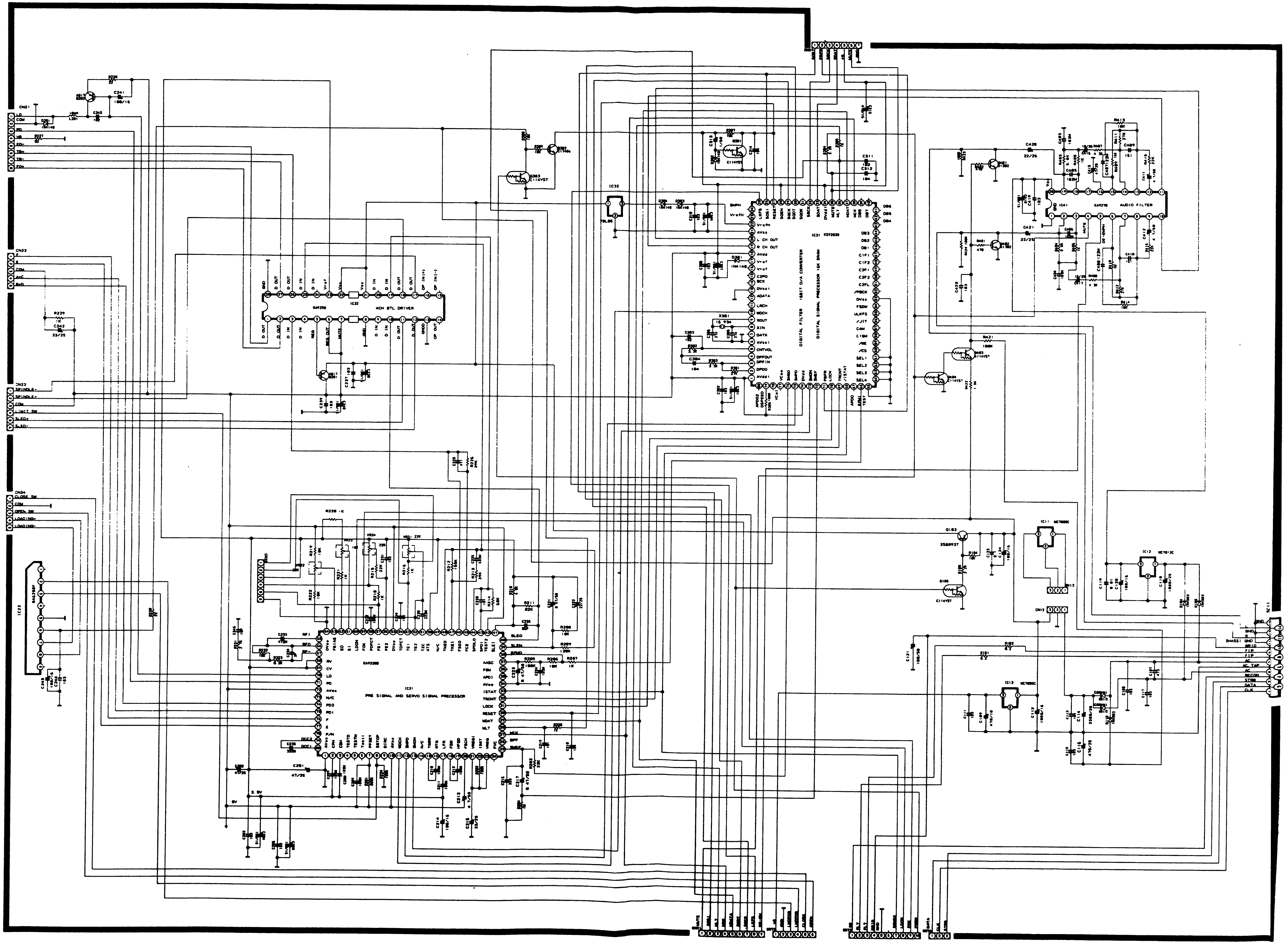
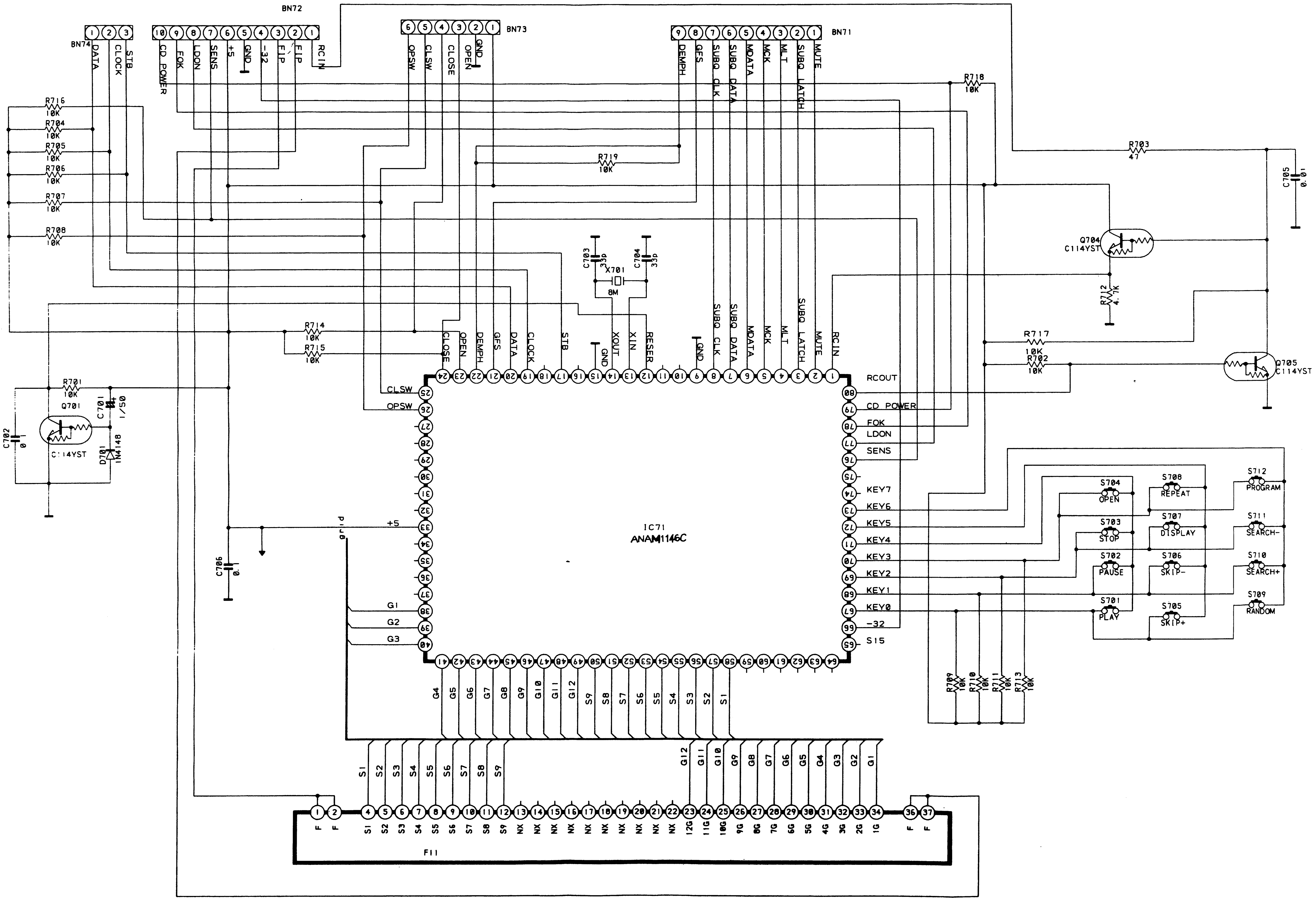
KA9220
ISET
APDI
BPF
EFMO
AASC
DVEE(S)
MCK
MLT
MDAT
RESET
DIRC
TRCNT
AVEE(S)
TEST1
ISTAT
PFSET
CDM
DPH
TESTH
SSTOP
SLC1
SLCO
SLDN
TEST2
FVC
VREGI
VREG
FBN
NVC
LOCK
SMPD
SMDN
SMEF
DVCC(S)
SPDI
SPDLO
WDCH
FOK
TEST3
LBDN
AVCC(S)
TBF CT
TKEI
TKEO
AVCC(RF)
TGSV
RTG
ATS
TZC
TE2
TE1
NVC
FSCH
FBFCT
FCE
FSEO
RF1
RFO
P/N
LD
PD
PDI
PD2
CV
N/C
F
E
EO
EI
RV
ICC2
ICC1
AVEE(RF)
FBIAS
FE1
FE2
MFGD
FSV
LFR
LOOP FLITER
EFM COMPARATOR
TTL TO CMOS
CMOS TO TTL
MIRR AMP & COMPARATOR
MUX
VREG & VIC
VCO 1-TIME
VCO 2-TIME
MICOM TO SERVO CONTROL AUTO SEQUENCER
FS1 TD4 TG1 TG2
TM1 TO7 PS1 TD4
TRACKING PHASE COMPENSATION
CLV LPF
DEFECT AMP & COMPARTOR
WINDOW COMPARATOR
TRACKING ERROR AMP
FOCUS OK AMP & COMPARTOR
FOCUS PHASE COMPENSATION
APC AMP
RE AMP
FOCUS ERROR AMP
IC31
KS9282B
SQS1
SBCK
SDAT
SQDN
SQCK
SQDT
SQCK
SUBCODE SYNC DETECTOR
SUBCODE OUTPUT
SUBCODE Q REGISTER
EFMI
APDO
EFM PHASE DETECTOR
23BITS SHIFT REGISTER
EFM DEMODULATOR
+5V
VCOI1
DPDO
DPFIN
DPFOUT
CNTVOL
DSPEED
SMEF
SMON
SMPD
SMSD
LOCK
DPLL
FRAME SYNC DETECTOR PROTECTOR INSERTOR
CLV SERVO
ECC
16K SRAM
SRAM ADDRESS
XTAL TIMING GENERATOR
INTERPOLATOR
XIN
XOUT
MLT
MDAT
MCK
CPU INTERFACE
TRACK COUNTER
DIGITAL FILTER ( )
MSTAL
TRCNT
DIGITAL OUTPUT
D/A CONVERTER
VRE FL1
VRE FH1
+5V
DATX
RCHOUT
LCHOUT
IC41
KA9270
GND
LPT OUTPUT
LPF1B
MUTE CONTROL INPUT
DE-EMPHA CONTROL INPUT
DE-EMPHA CTL
DE-EMPHA OUT1
DE-EMPHA IN1
BUFFER OUT1
INPUT
LPF1
LPF2
MUTE SW
DE-EM SW
DE-AMP1
DE-AMP2
BUFFER1
BUFFER2
LPF OUTPUT2
LPF2B
Vcc
RIPPLE
DE-EMPHA CTL
DE-EMPHA OUT2
DE-EMPHA IN2
BUFFER OUT2
INPUT2
SPINDEL MOTOR
SLED MOTOR
TRACKING
FOCUS COIL
LEVEL SHIFT
10K
BUY
T.S D
REGULATOR
MUTE
30K
+5V
IC23 BA6208
IC71
ANAM1146C
-32V
+5V
FIP PANEL
+12V
REGULATOR
+8V
REGULATOR
+5V
REGULATOR
G
L
G
R
GND
GRID
FIP
FIP
AC
TAP
AC
REMOCON
STRB
DATA
CLK

SCHEMATIC DIAGRAM

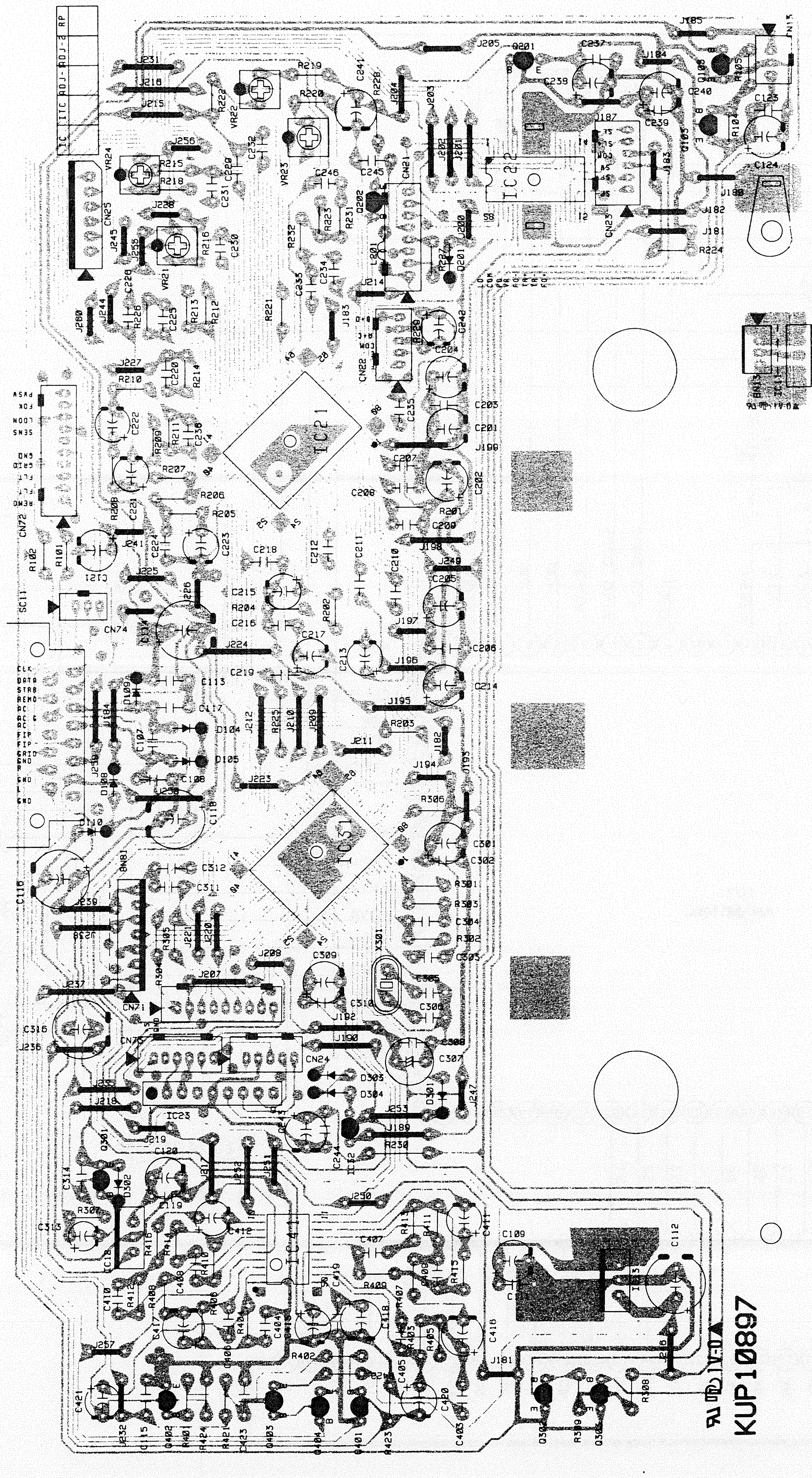
CD-PLAYER


CN21
LD
COM
PD
VR
FO-
TR+
TR-
FO+
CN22
CN23
SPINDLE-
SPINDLE+
COM
LIMIT SW
SLED+
SLED-
CN34
CLOSE SW
COM
OPEN SW
LOADING+
LOADING-
IC22
4CH BTL DRIVER
IC32
IC31
DIGITAL FILTER 16BIT D/A CONVERTER
DIGITAL SIGNAL PROCESSOR 16K SRAM
IC41
AUDIO FILTER
IC21
PRE SIGNAL AND SERVO SIGNAL PROCESSOR
IC23
IC11
IC12
IC13
Q183
X301
GND
SHASSI GND
FIP
AC
AC TAP
DATA
CLK
MUTE

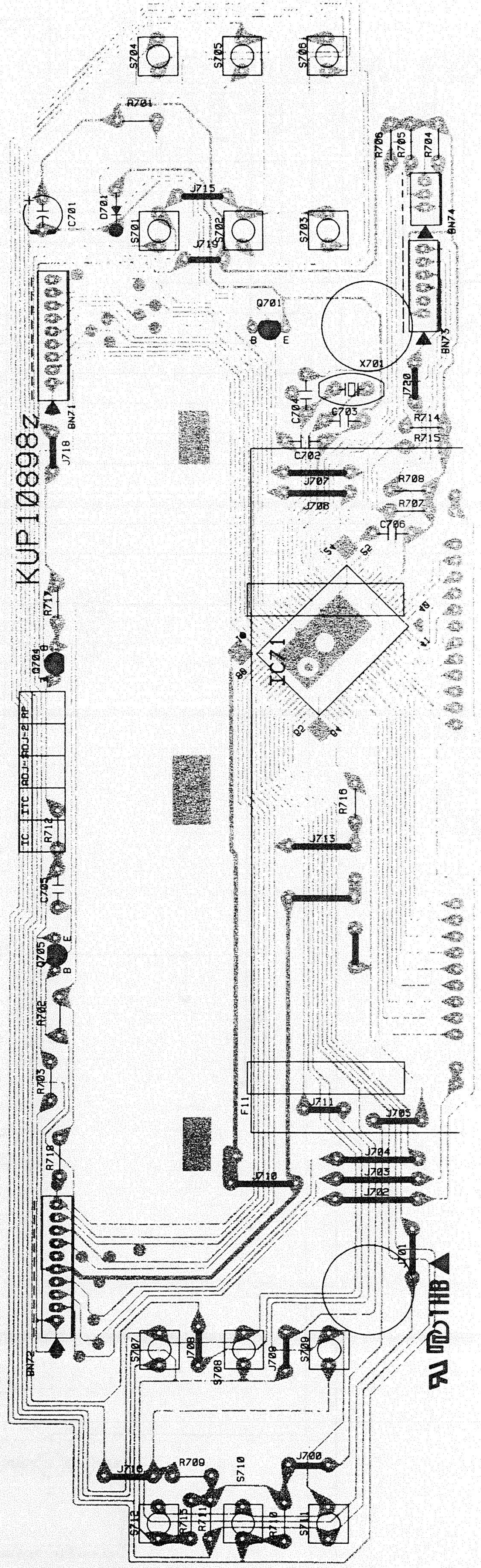
CD-PLAYER DISPLAY


BN74
DATA
CLOCK
STB
BN72
CD POWER
FOK
LDON
SENS
+5
GND
-32
FIP
FIP
RCIN
BN73
OPSW
CLSW
CLOSE
OPEN
GND
BN71
DEMPH
GFS
SUBQ CLK
SUBQ DATA
MDATA
MCK
MLT
SUBQ LATCH
MUTE
R716 10K
R704 10K
R705 10K
R706 10K
R707 10K
R708 10K
R718 10K
R719 10K
R703 47
C705 0.01
Q704 C114YST
R712 4.7K
C703 33p
C704 33p
X701 8M
R714 10K
R715 10K
R717 10K
R702 10K
Q705 C114YST
R701 10K
Q701 C114YST
C701 1/50
C702 0.1
D701 1N4148
C706 0.1
CLOSE
OPEN
DEMPH
GFS
DATA
CLOCK
STB
GND
XOUT
XIN
RESET
GND
SUBQ CLK
SUBQ DATA
MDATA
MCK
MLT
SUBQ LATCH
MUTE
RCIN
RCOUT
CLSW
OPSW
CD POWER
FOK
LDON
SENS
KEY7
KEY6
KEY5
KEY4
KEY3
KEY2
KEY1
KEY0
-32
S15
+5
grid
G1
G2
G3
IC71
ANAM1146C
G4
G5
G6
G7
G8
G9
G10
G11
G12
S9
S8
S7
S6
S5
S4
S3
S2
S1
S704 OPEN
S703 STOP
S702 PAUSE
S701 PLAY
S708 REPEAT
S707 DISPLAY
S706 SKIP-
S705 SKIP+
S712 PROGRAM
S711 SEARCH-
S710 SEARCH+
S709 RANDOM
R709 10K
R710 10K
R711 10K
R713 10K
F F S1 S2 S3 S4 S5 S6 S7 S8 S9 NX NX NX NX NX NX NX NX NX NX 12G 11G 10G 9G 8G 7G 6G 5G 4G 3G 2G 1G F F
FI1

PRINTED CIRCUIT BOARDS



IC21
IC22
IC31
IC41
IC23
CN71
CN72
CN74
CN75
CN24
VR21
VR22
VR23
VR24
X301
IC TTC ADJ-2 RP
KUP10897

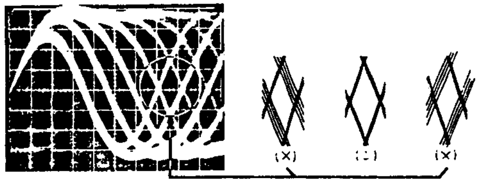


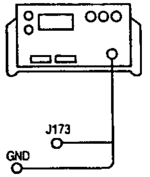
S704
S705
S706
S701
S702
S703
S707
S708
S709
S710
S711
S712
IC71
X701
Q701
Q704
Q705
D701
C701
BN71
BN72
BN73
BN74
F11
IC TTC ADJ-2 RP
KUP10898Z

MEASUREMENTS AND ADJUSTMENTS

FOCUS OFF SET ADJUSTMENT

1. Test equipment connection is shown in Fig 1.1
2. Play the test disc.
3. Adjust (VR22 so that the eye pattern of RF Signal is open widest. (Fig 1.2)

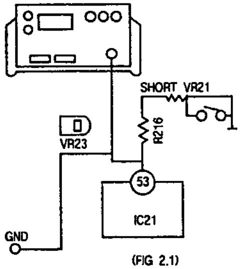




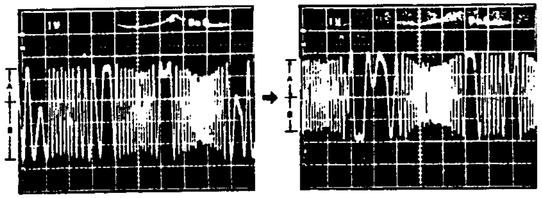
(FIG 1.1)

E/F BALANCE ADJUSTMENT

1. Position the baseline trace of the oscilloscope to the center horizontal graticule line.
   Oscilloscope setting: VOLT 1V/Div
   SWEEP 2msec/Div
2. Turn on the power switch and play the track 1 of test disc.
3. Connect the oscilloscope to R216 (Pin 53 of the IC 21) (See Fig 2.1).
4. Short the VR21 Turn Fully clockwise, adjust the VR23 so that A=B (See Fig 2.2).
   Oscilloscope setting: VOLT 1V/Div
   SWEEP 5msec/Div
   INPUT COUPLING.....................DC
5. When the F.L.T displays 00:00.., press the play button and repeat procedure.
6. After adjustment, VR23 is center.

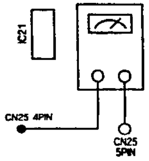

SHORT VR21
R216
VR23
53
IC21
GND

(FIG 2.1)



FOCUS GAIN ADJUSTMENT

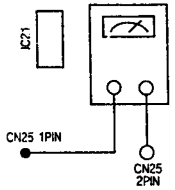
1. Test equipment connection is shown in Fig 3.
2. Play the test disc.
3. Adjust VR24 until monitor level at VTVM becomes 200 mV. (AC)


IC21
CN25 4PIN
CN25 5PIN

(FIG. 3)

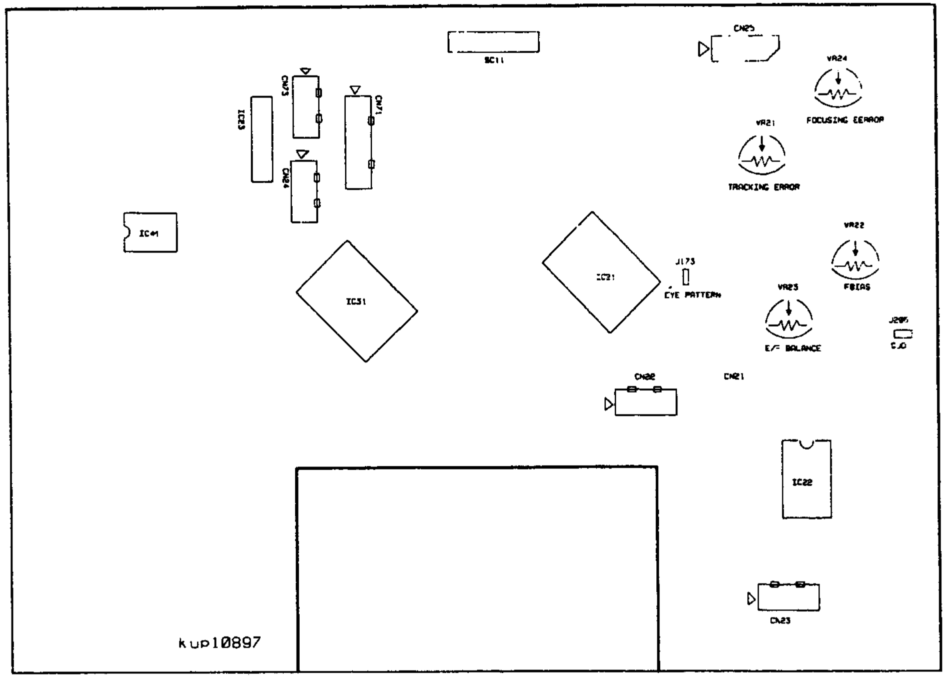
TRACKING GAIN ADJUSTMENT

1. Test equipment connection is shown in Fig 4.
2. Play the test disc.
3. Adjust VR21 until monitor level VTVM becomes 150mV. (AC)


IC21
CN25 1PIN
CN25 2PIN

(FIG. 4)

■ ADJUSTMENT POINT


SC11
CN25
VR24
FOCUSING EERROR
VR21
TRACKING ERROR
IC23
CN73
CN71
CN24
IC41
IC31
IC21
J173
EYE PATTERN
VR22
FBIAS
VR23
E/F BALANCE
J205
CJO
CN22
CN21
IC22
CN23
kup10897

KA9258D (MOTOR DRIVER)

No.	SYMBOL	I/O	DESCRIPTION
1	DOL1	O	DRIVE OUTPUT
2	DOL2	O	DRIVE OUTPUT
3	DIL1	I	DRIVE INPUT
4	DIL2	I	DRIVE INPUT
5	REG	-	REGULATOR
6	VREG	O	VOLTAGE REGULATOR
7	MUTE	-	MUTE
8	GND1	-	GND
9	DI2.1	I	DRIVE INPUT
10	DI2.2	I	DRIVE INPUT
11	DO2.1	O	DRIVE OUTPUT
12	DO2.2	O	DRIVE OUTPUT
13	GND2	-	GND
14	OPOUT	O	OP AMP OUTPUT
15	OPIN (-)	I	OP AMP INPUT (-)
16	OPIN (+)	I	OP AMP INPUT (+)
17	DO3.1	O	DRIVE OUTPUT
18	DO3.2	O	DRIVE OUTPUT
19	DI3.1	I	DRIVE INPUT
20	DI3.2	I	DRIVE INPUT
21	Vcc1	-	Voltage Regulator (+8V)
22	Vcc2	-	Voltage Regulator (+8V)
23	VREF	-	2.5V BIAS REQULATOR
24	DI1.1	I	DRIVE INPUT
25	DI1.2	I	DRIVE INPUT
26	DO1.1	O	DRIVE OUTPUT
27	DO1.2	O	DRIVE OUTPUT
28	GND3	-	GND

IC71 (μ-COM)

PIN No.	SYMBOL	I/O	DESCRIPTION
1	RCIN	I	REMOCON data input
2	MUTE	O	MUTE signal output
3	SUBQ LATCH	I	Sub code sync signal (S0+S1)
4	MLT	O	Latch signal output
5	MCK	O	Serial Clock output
6	MDATA	O	Serial data output
7	SUBQ DATA	I	Serial input of Subcode Q data
8	SUBQ CLK	I/O	Clock for output subcode Q data
9	GND	-	
10		-	Non connection
11		-	Non connection
12	RESET	-	Reset port
13	XIN	I	Ceramic oscillator input. 8MHz
14	XOUT	O	Ceramic oscillator output
15	GND	-	
16		-	Non connection
17	STB	I	Strobe input from DECK
18		-	Non connection
19	CLOCK	I	Clock input from DECK
20	DATA	I	Data input from DECK
21	GFS	I	The Lock Status input of fram sync
22	DEMPH	O	Emphasis/Non Emphasis output ("H": Emphasis)
23	OPEN	O	Loading Motor open output
24	CLOSE	O	Loading Motor close output
25	CLSW	I	Close limit switch
26	OPSW	I	Open limit switch
27~32		-	Non connection
34~37		-	Non connection
38~49	G1~G12	O	Grid output data
50~58	S9~S1	O	Segment output data
59~65		-	Non connection
66	Vp	-	FLT power port (-32V)
67~73	KEY0~KEY7	-	Key read input port
76	SENS	I	The internal status input from DSP
77	LDON	O	Laser diode ON/OFF control port
78	FOK	I	Focus ok comparator pin
79	CD POWER	O	Power ON/OFF switch control port
80	RCOUT	O	Remocon data output